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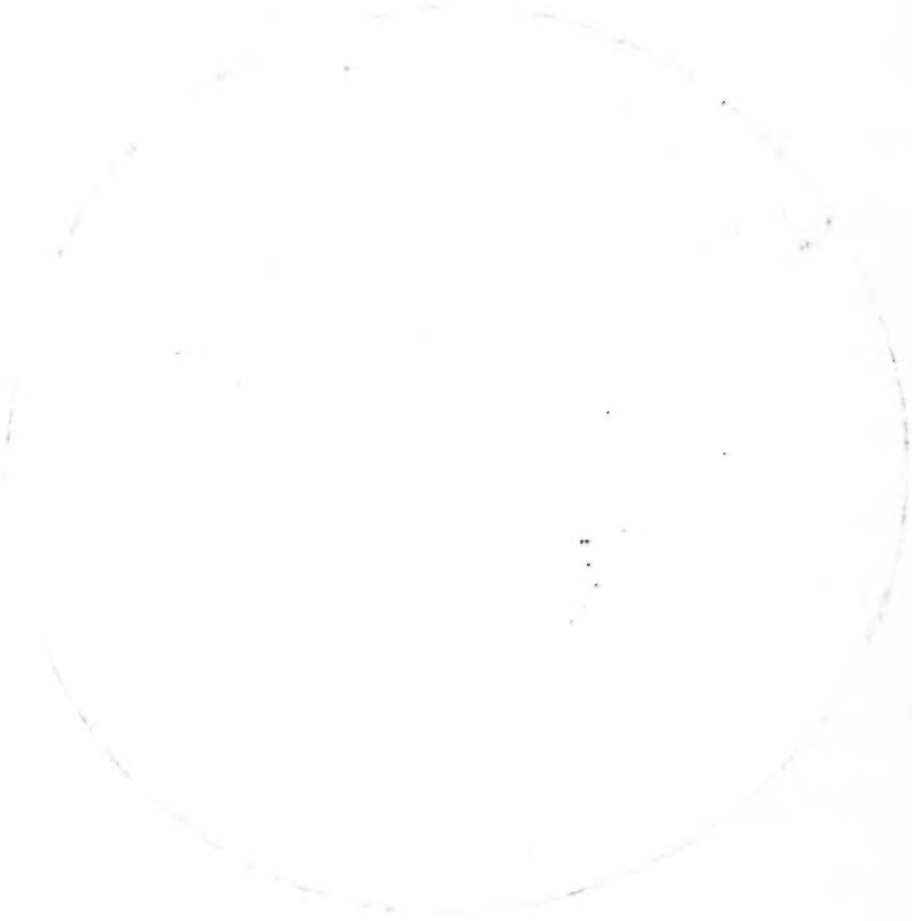

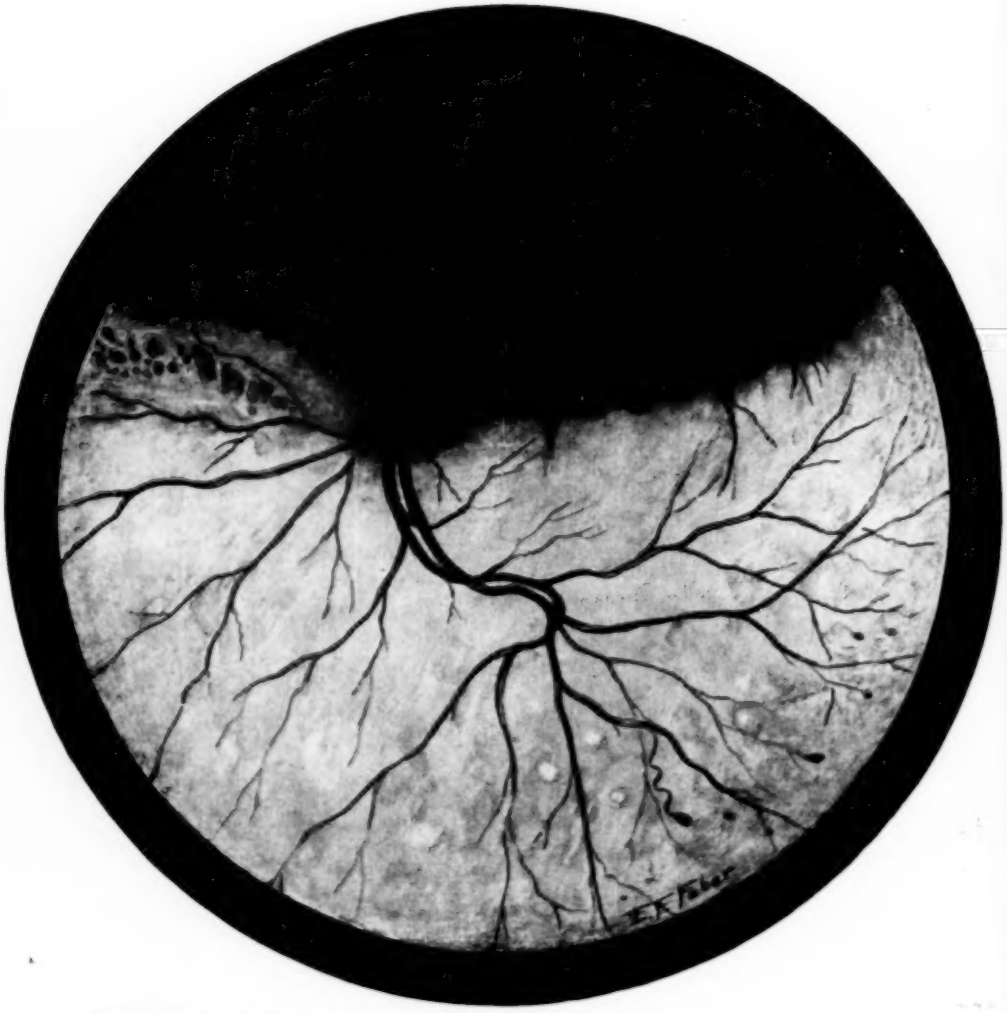

EXTERNAL EXUDATIVE RETINITIS, OR COATS'S DISEASE. (SIDNEY L. OLSHO)

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CASE OF EXTERNAL EXUDATIVE RETINITIS

(Coats's disease)

SIDNEY L. OLSHO, M.D.

PHILADELPHIA

Friends of the patient, a woman of nineteen years, had noticed a peculiar bright reflex from the left eye. The family history included two cases of blindness of an apparently hereditary character, retinitis pigmentosa (in the patient's sister), and brain tumor. Only the upper fourth of the fundus was approximately normal, while the lower three-fourths appeared as a homogeneous soft yellowish-white opaque surface raised almost uniformly about 1.5 D. (See color plate, frontispiece to this issue of the American Journal of Ophthalmology). The abnormal conditions in the retinal vessels included anastomosis of a small vein with an arterial branch, several small venous coils, and two glomerulus-like coils of new vessels.

External exudative retinitis was described in detail by Coats[1] in 1908, and now bears his name, being commonly known as Coats's disease. Lloyd[2] enumerates a total of only eighty-three references to this condition in the literature from 1876 to 1928.

The etiology is obscure. Young people apparently in good health without significant antecedent history are affected, males more frequently. The disease is usually unilateral, of insidious onset and progress. Vision is gradually impaired and the visual fields encroached upon. The main mass of exudate is seen usually near the posterior pole, or at the side of the disc, or encircling the disc, or at the macula or obscuring the macula, or with long tongues or a combination of central and peripheral patches. The common cause of the general white effect is the elimination of the red color derived from the choroid. Complications eventually set in, retinal detachment or iris changes, cataract, secondary glaucoma; pain finally necessitating enucleation.

A brief review of the pathology in Coats's first case will state the typical features. There was a billowy retinal exudation. Vessels passed over the exudate. There were irregular dilatations and contractions of arteries and veins, and large hemorrhages. Many veins were coated with exudate.

The main histologic features were the presence of a partially organizing fibrinous exudate between the retina and the choroid. The inflammatory changes affected mainly the deeper external layers of the retina, and the choroid hardly at all, except where some adhesions had finally occurred.

In the outer layers of the retina were found infiltration with leucocytes, increase in fiber elements, loss of rods and cones, cholesterin spaces, phantom cells, giant cells. The fibrinous structure received its blood supply from the overlying retina where capillaries normally occur. The internal layers of the retina suffered, but the changes were those of secondary atrophy. The vascular changes occurred in four forms: (a) dilatations of the wall, (b) thickening and degeneration of the walls with obliterations of the lumen, (c) ensheathing of the vessels with leucocytes, (d) formation of new vessels.

According to Berg[3] the primary con-

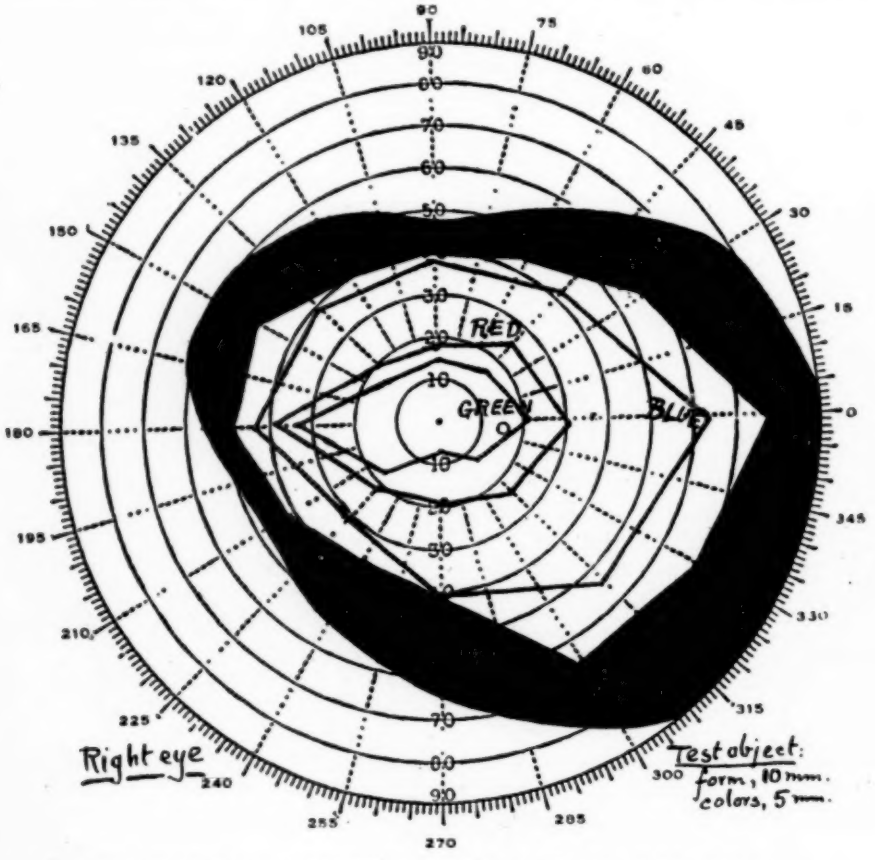
ditions are changes in the blood vessels of the retina. These produce larger and smaller hemorrhages in and behind the retina, serous and serofibrinous exudations, and more or less extensive necrosis of the retina. As a reaction, proliferation of glia and pigment epithelium follows, with formation of new connective tissue on the inner side of the choroid and along the retinal vessels. This brings about adhesion between retina and choroid.

Case report: The present case falls in Coats's second group, namely those with gross vascular changes.

Rose G., aged nineteen years, single. The mother died aged thirty-six years of an inoperable brain tumor, nature unknown but not luetic. The father, previously healthy, died aged seventy-four years of a stroke. The maternal grandfather and two aunts died of tuberculosis. The father's sister, the mother of a blind child which died in early infancy, was herself blind and died as a young adult. Several children in an uncle's family were lost young. Two brothers and four sisters are in good health. The oldest sister, aged thirty-four years, has a bilateral retinitis pigmentosa, said to date back to the age of nine years.

The personal history includes appendectomy in 1928, with brief convalescence; and a fall in a faint in July, 1927, producing a lip cut but no head injury. No other past illness is recalled. At present the general health is perfect. Hemoglobin is 76 per cent, red cells 4,520,000, and leucocytes 7,200 with polynuclears 62 per cent, lymphocytes 35 per cent, mononuclears 1 per cent, eosinophiles 1 per cent, and basophiles 1 per cent.

Wassermann, blood chemistry, urinalysis, x-rays of chest, sinuses, and



External exudative retinitis (Olsho). Fig. 1. Vision field of right eye.

head, physical examination, and two Pirquet examinations were negative. Blood coagulation time was three minutes.

The family history brought to light several instances of disease of the nerve tissues, including brain tumor, retinal disease, and "blindness".

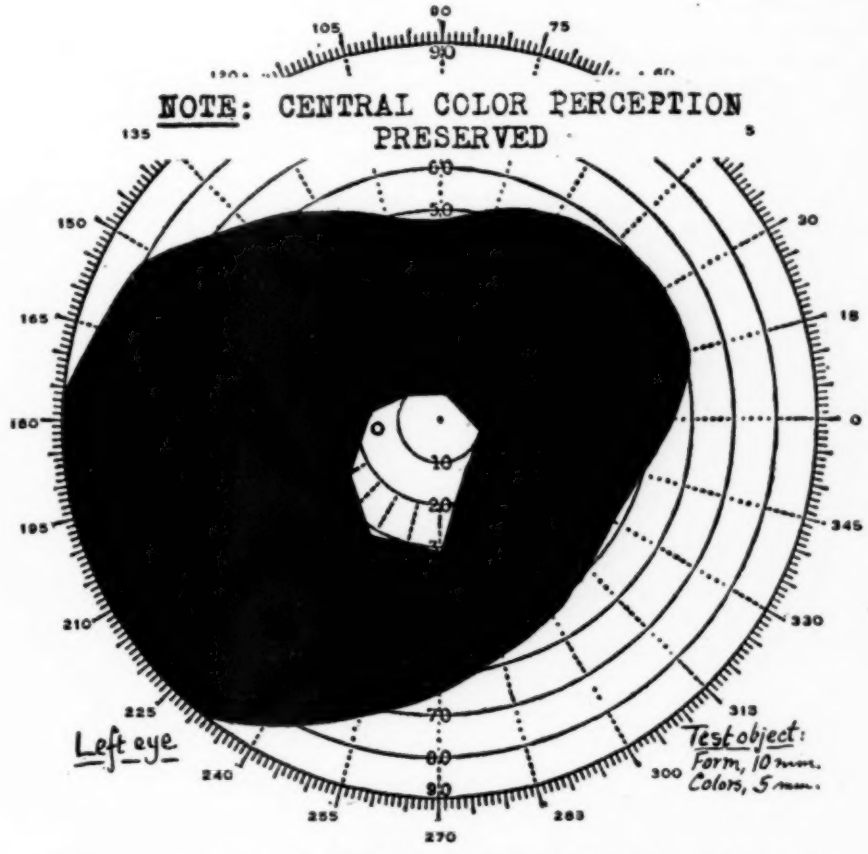
Coats suggests taking the coagulation time in all cases. A family history of tuberculosis is mentioned by authors. Observe the several instances here, some of them indefinite. Syphilis not a cause is here excluded. Anemia is mentioned by authors. Note the low hemoglobin and a somewhat unusual differential white cell count.

Friends observed a peculiar bright reflex from the left eye about September, 1928. The patient first came for consultation March 1, 1929, expecting glasses to remedy the defective vision recently noticed in the left eye.

The vision of the right eye was 20/15 plus; that of the left eye 10/200 in a restricted field. (See fields, figures 1 and 2.) The external appearances were normal except a peculiar light reflex from the left pupil. There was no resistance to backward pressure. Tension was fifteen millimeters Schiøtz in each eye. The pupils were four millimeters, round, and equal; the right reacted promptly, the left poorly, to light. The consensual reflex right to left was good, left to right very poor.

Left eye: The nerve head is hazy in appearance. The edges are very poorly defined but the upper temporal edge is discernible. The entire disc is cloudy. The vessels can be traced to the center of the disc, obscured by haze. They take the usual general direction. The veins are full, the arteries very thin.

The lower three-fourths of the fun-



External exudative retinitis (Olsho). Fig. 2. Visual field of left eye.

dus is seen as a homogeneous soft yellowish-white opaque surface raised almost uniformly about 1.5 D., extending as far as one can see toward the ora serrata except in one direction as will be mentioned. The upper limit of this surface presents two borders, (1) a border extending from the margin of the disc upward and temporalward as far as one can see, and (2) a border extending from almost the upper margin of the disc slightly upward and nasalward, almost but not quite as far as one can see.

This thin superior temporal margin begins at the temporal disc margin one-fourth down with several indentations, and then continues upward and outward as a border of small undulations sharply defined from the nearly normal red fundus above.

The thin superior nasal margin of the yellowish white surface originates in the hazy upper nasal quadrant of the disc and continues inward nasally as a border, first straight, then developing a number of undulations sharply defined from the nearly normal fundus above. This border presents some ovoid collections and streaks of very soft gray pigment slightly below its superior limit. Far to the nasal side the border becomes broken and is lost in an incompletely coalesced collection of yellowish-white islets.

This massive yellowish-white surface is almost of one color. A few very lustrous crystalline spots (cholesterin?) are seen in the lower temporal field.

The retinal arteries and veins pass in front of the yellowish white surface and are free from haze except at points near and upon the disc. Some of the smaller branches can be seen passing over the edge from the nearly normal retina on to the yellowish white area, and, contrariwise, small vessels pass on to the nearly normal retina without showing any appreciable bends.

There is no increase in the general vascularity of the fundus near the disc, but far down and far out near the five o'clock region peculiar vascular changes are noted. These are as follows: There is in increased number of good-sized venous and arterial branches. In one instance there is an anastomosis of a small vein with an arterial branch. The inferior temporal vein, traced far out, becomes extremely thin for a short distance and then bifurcates. These bifurcations are extremely tortuous and present several small coils and one circumscribed glomerulus-like coil of new vessels.

The artery in this region has a tortuous course and terminates with a glomerulus-like coil of new vessels. There are quite a number of other small tortuosities and fusiform swellings in this region, as well as short coiled branches.

The yellowish-white surface beyond these vascular coils becomes billowy, and projects several diopters forward in a number of rolls of retinal detachment in which the ultimate terminal vessels are lost. This detachment is very far down and out to the periphery, too far out to see movement.

235 South Fifteenth street.

References

[1] Coats. Royal London Ophthalmic Hospital reports, 1907-1908, v. 17.
[2] Lloyd. American Journal of Ophthalmology, 1928, v. 11, p. 559.
[3] Berg. Graefe's Archiv für Ophthalmologie, v. 98, pts. 3 and 4, abst., Ophthalmic Year Book, 1920, p. 162.

THE INDIAN AND THE TRACHOMA PROBLEM

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Detailed evidence is presented to show that trachoma did not develop in the Red Man until he came into close contact with the white population. Recent reports from various officers of the Indian service of the United States government point to a definite increase in the incidence of the disease. The surgical and other measures taken during the last few years for the reduction of trachoma among the Indians are reviewed. In the later stages of the disease the author prefers grattage, including scarification with a three-bladed knife and vigorous scrubbing with bichloride of mercury solution on a tooth brush. Extreme cases require excision of the tarsal plate of the upper lid.

Trachoma has been a problem in every country in which it has been observed, largely on account of the neglect of personal hygiene by those whose misfortune it is to be afflicted with it. Another factor of equal importance, and in the nature of a corollary to the first, is overcrowding. It may be said that an aggregation of individuals which is sufficiently well in hand from a sanitary, hygienic, and epidemiologic standpoint is not a crowd, but the very use of the word crowd implies a breaking down of the barriers of restraint in all directions. Crowding always becomes overcrowding and prevents the ordinary precautions in all directions.

We have on record the trials and tribulations of those whose mission in life it was to attempt the eradication of this disease from the armies of Europe and from the pauper quarters of Egypt and India, and they may well be classed with the difficulties that attended the Herculean labors in the Augean stables.

The government of the United States, when it recognized the seriousness of the disease, ordered through the Treasury Department, October 30, 1897, that it should be classified as "dangerous contagious" under the immigration law of 1891, which required deportation of aliens with diseases so classified. This has served to eliminate the importation of trachoma from abroad. The attention that the disease received within our own confines at this time also aided in an extensive campaign for eradication of the affection among the inmates of orphan asylums, jails, almshouses, and so on, until now that form of disease in the eastern part of the United States is negligible in quantity.

However, there are foci among patients of American parentage, scattered throughout Kentucky, West Virginia, southern Illinois, Ohio, and some of the western states, but these are rapidly decreasing through the efforts of the Public Health Service. The work being done by this branch of the government in this connection is very creditable.

While the disease has shown a response to treatment among the white people, and it seldom attacks the black people, it shows a tendency to attack quickly, and to spread quickly among, the red people. It is with the disease among the latter that this paper purposes to deal.

It is difficult to trace the origin of the disease among the Indians, but it would seem to be of comparatively recent origin, and not due either to the early Spanish conquerors, or to the intermingling of the "white Indians," the mythical lost tribes of Israel who migrated from Asia bringing their oriental ailments with them. It is unfortunate that the recorded observations of students of Indian matters will not support either view, as their fantastic character appeals even to the writer of this paper.

One of the earliest reliable observations of record on diseases of the Indian is that of Dr. Benjamin Rush. This was made in an oration before the American Philosophical Society, Philadelphia, February 4, 1774, entitled "On the natural history of medicine among the Indians of North

America", and published by Joseph Cruikshank, Second and Market Streets, Philadelphia. While his own experience was by no means small, Rush quotes Edward Hand, who was surgeon to the Eighteenth Regiment, stationed at Fort Pitt several years, and refers to La Houtan's and Charlevoix's histories of Canada. This entire paper as well as its references are of great moment in this connection, since they make absolutely no mention of trachoma, or of any epidemic or endemic eye disease the description of which might coincide with that of the disease under our consideration. Blindness, partial or complete, was not sufficiently common to give rise to comment. This negative observation is highly important.

The next observation is contained in the book "Travels to the source of the Missouri river, etc.", Lewis and Clark, 1804-1806, published in London in 1814, page 549, in which the prevalence of "sore eyes" among the Choppunish or Nez Percés Indians is mentioned.

The Bureau of Indian Affairs furnishes us with the information that there is a tradition among the Indians that the disease was brought into this country by the early employees of the Hudson Bay Company.

A passing reference to "the Hudson's Bay Company" (its correct title by the way), will serve to rid it of the odium of being a trachoma carrier. In 1670, Charles the Second of England granted a charter to Prince Rupert and seventeen other noblemen and gentlemen, incorporating them under the title "The Governor and Company of Adventurers of England trading into Hudson Bay", popularly known as "the Hudson's Bay Company". Their trading activities were mostly coastal and the personnel of the company was English. They were raided frequently by the French up to 1700. After Canada was ceded to the English many independent traders entered the field; one group known as the "Northwest Fur Company of Montreal" became quite a competitor of the Hudson's Bay Company, and between the two in their rivalry the business was almost completely ruined and the Indians completely demoralized. In 1821 the companies amalgamated, and their bad influence was ameliorated. In 1811 Lord Selkirk, at that time a controlling factor in the Hudson's Bay Company, founded a Scottish settlement near the present site of the city of Winnepeg, known as "the Red River Settlement". While it was the scene of a massacre or two in the course of the fur traders' feud, it is also possible, owing to the date of its founding and to its close association with the Indians, that it was the original focus of trachoma transplanted from Europe. At this time trachoma was extremely common in Europe and especially so in the British Isles.

The same source (Bureau of Indian Affairs) furnishes us with the information that under the vague and indefinite name of "sore eyes" a condition of the eyes was recognized and treated by a rude form of grattage by the medicine men of the tribes for many years. The granulations were removed by means of an improvised scraping instrument, such as a part of a section of a reed with one edge sharpened by rubbing it on an abrading surface, or scraping it to thinness with a piece of glass, or sharp-edged reed leaves cut in short pieces, so that they would not bend. It is assumed that this disease was identical with trachoma. This must belong to a comparatively recent period, as there is no mention of it in any of the works perused and quoted in this article.

From surgeons in the service we also learn that another Indian tradition accredits all the various Spanish conquerors and adventurers without having introduced it. If there is any relationship here it is probably reversed; that is, the Spanish contracted it from the Indians. Trachoma is an invaliding affection: people afflicted with it do no more conquering, except through the medium of the disease.

Prior to the Napoleonic campaigns, the French had very little trachoma, and it was quickly eradicated rather shortly afterward. Swan Burnett, a noted writer on the subject, states that trachoma was introduced into Europe in 1802, but other authorities tell us that it was prevalent in Great Britain as far back as the eighteenth century but increased after the Egyptian campaign against Napoleon. It is interesting to note that Myjashita, a Japanese, says that it was known in Japan 1200 years ago (statement quoted in 1898 in Norris and Oliver's system of Ophthalmology). The Celtic races were especially subject to it, the Irish more than the Scotch. Even as late as 1895, Sydney Stephenson, an English eye surgeon (quoted in Zentralblatt für praktische Augenheilkunde, 1898, page 31), showed that trachoma patients in England averaged six, in Scotland nine, and in Ireland 26.4 per thousand of all eye patients.

Therefore, we must look for such infection of the Indian tribes as occurred at this time, or through the influence of these fur trading companies, as coming directly from the Celtic races.

The vague and misleading reports compel us to fall back upon recorded observation for any reliable information. Fortunately some of the literature abounds in interesting facts concerning the Red Man, and in view of the thoroughness with which other observations are made it may be assumed that where no ocular disease is mentioned no ocular disease was observed and consequently none existed.

George Catlin ("The North American Indian—Manners, Customs, and Conditions", London, 1857, ninth edition), whose works and pictures of the Indians delighted young and old in the period immediately antedating the Civil War, began his observations in 1832, and visited forty-eight tribes containing in all about 400,000 persons. At that time there were over two million of them. This is his estimate: contrast that with the recent estimate, October 6, 1924, by the Federal Government, in which it is stated there are 346,962 of record and about 60,000 fused with the general population, as great a sum total as ever populated the area of the United States since the advent of Columbus.

The great value of Catlin's observation of the Indians in so far as it concerns us is in his drawings and pictures of the Indians, not only of the chiefs but of the types of the different tribes, and in none is there any of the usual deformities of the eyelid that would arouse suspicion of either recent or remote trachoma.

A systematic perusal of this work elicits the fact that the pictures of the following tribes of Indians give no suggestion of the disease: Crows, Assineboins, Mandans, Minatarees, Riccarees, Sioux or Dahcotas, Sacs, Ioways, Konzas, Omahaws, Ottoes, Puncahs, Comanchees, Kicapoos, Osages, Pawnees (Catlin's spelling of these tribes' names).

He does mention that chief Black Dog of the Osages was blind in one eye but does not mention the cause. He also states that the Shawnee prophet—chief Ten-squa-ta-way of the Shawnees north of Saint Louis, and brother of Tecumseh—was blind in one eye, but no cause was given in this instance either.

Another observation of this same writer (Catlin, volume 2, page 226), is worthy of mention, in which he states that in some individuals there is a want of expansion and apparent smallness of the eye, which he found on examination to be principally due to the effect of continual exposure to th rays of the sun, and to the wind, without the shields that are used in the civilized world, and, when indoors, of smoke which is always present.

This latter factor is emphasized in all writings upon Indian life, and disastrous are the consequences that are said to attend it. With proper publicity it should influence cigarette smoking in modern society, especially among women, whose ocular graces should be maintained at all costs!

That these lay writers actually took notice of the ocular conditions among the Indians is again shown in the book by Seth K. Humphreys published in 1906, entitled "The Indian dispossessed", in which there is a picture of chief Red Cloud in 1903, blind, probably as the result of trachoma.

J. M. Toner in 1897, in the Rocky Mountain Medical Association's review of the early physicians and their work on the Pacific slope, makes no mention of the disease under consideration, although a very comprehensive bibliography of the time is included on page 107 of this brochure. This same writer at an earlier period (Virginia Medical Monthly, Richmond, 1877, volume 4, page 334), in an article entitled "Practice of medicine among the North American Indians", makes no mention of trachoma, either directly or indirectly, but quotes Lewis and Clark in their journey to the Pacific as having noted the great frequency of "sore eyes" among the Indians.

Reading the literature of the Indians carefully, one is struck by the frequency of this sort of testimony and more especially by this particular quotation from Lewis and Clark. If they did nothing else, this immortalizes them. Every writer running short of material quotes this observation. It assumes, after a while, the dignity of some of the atrocity tales of the late war.

The observations of the army men are not without merit. Colonel Richard Irving Doge in his book "Our Wild Indians", published in 1883, recounting an experience of thirty-three years among the Red Men, observed small pox, cholera, and other fevers, but fails absolutely to record observations covering any kind of eye disease, much less epidemic eye diseases such as trachoma.

Again, J. G. Bourke, in a book entitled "Medicine men of the Apaches", published in 1892, gives nothing that would direct suspicion toward the existence of the disease. Such an affection is so devastating that surely its existence could not escape so very many observers' attention, had it been present in more than isolated instances.

George B. Grinnell, a man of extremely large experience in this field, published in 1911 a book covering an experience at that time of about twenty-five years, entitled "Indians of today", did not observe trachoma among the Blackfeet Indians, although he states that it was present among the Mojav Indians at Fort Mojav, and those at Coeur d'Alène reservation, Devil's Lake, Turtle Monster, Fallon superintendency, and the Flathead reservation.

In a recent personal communication (February 13, 1924) to the writer, however, Mr. Grinnell states: "I feel very confident that in those days, now nearly forty years ago, I saw very few Indians who had what we used to call 'sore eyes'. Occasionally a man or woman was seen who was blind, but on the whole the sight of the Indians seemed extraordinarily good. Now and then an older person was seen whose eyes gave him or her trouble, but we used to think that the use of great amounts of paint and the dust and ashes carried by the whirling winds accounted for such cases. (This is most interesting, but especially so is the warning to the older people on the excessive use of face paint!)

Another experienced student of Indian life, Captain J. Lee Humphreyville, in "Twenty years among the hostile Indians", published in 1899, does not recite any instance of contagious eye disease or trachoma among the Blackfeet or other tribes of Indians.

Among the other early writers whose records show painstaking observation there is none more interesting than Samuel G. Drake, whose book entitled "Bibliography and history of the Indians of North America", published in Boston by Sanborn, Carter, and Bazin in 1841, is a most comprehensive digest of the knowledge of the Indian at that time. He makes

no reference to contagious eye disease or trachoma or anything that might resemble it. He does make reference on page 322 to a chief named "Blind Will" who served the English in King Phillip's War, but the cause of his blindness is left to conjecture.

Occasionally a government report is of value, if only from a negative standpoint. The Indian Bureau was transferred to the Department of the Interior in 1894. While annual reports followed its activities in the new environment, we have thought it not worth while emphasizing or analyzing them until 1868, when the post-bellum readjustment was well under way.

We found many things of interest but no reference to trachoma. There were 300,000 Indians of record at this time, of which 1320 were Blackfeet. We also learn that for several years the Navajos of New Mexico had been held as prisoners at Bosque Redondo at very great expense to the government. This could have been the beginning of their eye troubles, since nothing is more conducive to the development of trachoma than just this sort of housing.

Also, at the time of this report there was only one hospital in Washington Territory, at Yakama (now Yakima). The superintendent, T. J. McKenny, of the Territory, does not mention the existence of trachoma. However, small pox, scarlet fever, typhoid fever, whooping cough, measles, and undetermined fevers are referred to.

In the report of the United States special agent—W. J. McCormick—dated August 13, 1868, for the Flathead Indian agency in Montana Territory, is the first definite reference to "sore eyes" among the Indians. This takes on an additional significance from the fact that the Blackfeet Indians frequently raided them. As the gift of the conquered to the conquerors is their diseases, it is possible that here is the beginning of the Blackfeet eye troubles. In 1923 and 1924, we found the disease in great abundance among the latter.

When the legends concerning the introduction of trachoma among the Indians by foreign adventurers are under consideration, it is well to bear in mind that Florida, which entertained quite a few Spanish in the early days, as well as a group of French who settled in 1564 near Pensacola under René de Landonnière, also was the home of the Seminoles, which tribes in their native habitat have never had the affection even to this date.

Careless indeed would the student of this subject be were he to overlook the splendid survey made by Warren K. Moorehead in his work entitled "The American Indian of the United States, 1850 to 1914", published in 1914 by the Andover Press, Andover, Massachusetts.

Relying upon other peoples' quotations often brings forth statements that for a time halt the line of argument already given. Thus Moorehead quotes (page 27), the commissioner of Indian Affairs, Mr. Sells, as having remarked in his report dated December 8, 1913, that there were 60,000 Indians suffering from trachoma at this time, and that the disease had been introduced by European immigrants of the lower classes. This is a great many cases! It is not clear, however, just how the infected immigrants came in contact with the Indians.

On the other hand (page 32) among the Indians in Maine (and Maine has many points of possible contact with Europe through her sea coast), trachoma is admittedly rare. This is also true of New York State, where the disease has always been infrequent among the Red Men.

The value of contemporary photographs is well illustrated on page 52 of this book in the picture of an Objibwa Indian from Pine Point, White Earth Reservation, blind from trachoma. No such photographs adorn previous works on the Indian.

In answer to the question (page

345) "Is there more trachoma than years ago?" Moorehead relates the replies given by correspondents from different stations. It should be borne in mind that this book was published in 1914, and that the time referred to is immediately preceding that date. Thus the Alaska correspondent answers "yes", and says at Nulatos ten times as much. In two out of the three stations there was a decided increase. In Arizona, for the most part "yes"—two out of seven stations increased. In California at Likely and Pala there was an increase in two out of ten stations. In South Dakota in six out of fifteen stations, there was an increase over ten years previously. In Idaho two out of four stations showed an increase; in Kansas one out of two was increased; in Minnesota one out of four; in Montana three out of eight; in Nebraska one out of two; in Nevada one out of two; in New Mexico one out of two; in Oklahoma twelve out of twenty-five; in Oregon one out of four; in Washington two out of ten; in Wisconsin three out of seven. Altogether it would seem that the increase even at that time was considerable.

For a moment we may pause to refer to J. A. Gilfillan, a missionary at White Earth, Mine Point, Minnesota, from 1873 to 1898, who saw but very few cases of trachoma or even "sore eyes" even in the late part of this period, to say nothing of the early part.

But we must return to Moorehead's work once more, and on page 85 we find the statement that thirty-two per cent of the children of the Chippewa Indians in the government schools were found upon examination by the government's physician, Dr. Edwards, about 1910, to be suffering from trachoma. Moorehead, in common with others interested in the Indians, believes the overcrowding of the schools to be responsible for the dissemination of the disease (page 208), and he noted in 1909 (page 210) that the schools were not closed in the presence of the epidemic. He noted the disease among the Papagoes (page 227), and he refers (page 205) to the report somewhere about 1913 of J. Weston Allen, of the Boston Indian Citizenship Committee, of a tour through the Navajo country in which the disease was observed to be quite prevalent.

Thus different observers often arrive at the same conclusions through different routes.

G. E. Ellis, in his book on "The Red Man and the White Man in North America", published in 1882 (page 131), failing to observe pronounced illness of a chronic nature among the Indians, falls back upon a French observer Lafitan ("Mœurs des Sauvages", etc., volume 2, page 360), for support in the latter's statement that the Indians do not have the diseases common to the white man prior to contact and intercourse with them. No mention of trachoma is made by either writer.

Medical specialists have not been mute where this subject has been concerned. Dr. Swan M. Burnett, of Washington, D.C., who has written so much on the subject of trachoma, especially in the negro, published an article in the American Journal of Ophthalmology, September, 1896, entitled "The racial and geographical distribution of trachoma in the United States." This was intended to be the American supplement to a work by the French ophthalmic surgeon Chibret, who as chairman of a committee of the French Society of Ophthalmology, was to report on the continental aspect of the subject in May, 1896. (See also Chibret's "Étude de géographie ophtalmologique," Paris, 1896.)

Burnett states that he learns from other sources that the North American Indian is quite often the subject of trachoma, and that he himself has seen cases of it, but quotes Chibret's statement, made on the authority of a Canadian oculist, that the Iroquois, the Hurons, the Micmacs, the Chippewas, the Cris Santeux, and others in Canada are absolutely immune to

trachoma (1896). (Note the statement previously given by Moorehead regarding the Chippewa Indian children.)

In this paper by Burnett, there is considerable correspondence from men all over the country, mostly of a negative character in so far as the Indian is concerned, yet one, Dr. E. C. Rivers, of Denver, states that while he never saw a case of the disease in the Indian he had been told by the Jesuit missionaries that severe inflammation of the conjunctiva, answering to this description, was common among them.

Literature upon the Indian is often perused carefully without finding anything bearing upon this subject. Thus H. R. Schoolcraft's book "The North American Indian," as well as J. G. Bourke's "Medicine men of the Apaches" (Washington, 1892), are barren in so far as this topic is concerned. Helen Hunt Jackson's "Century of dishonor", published in 1886, might be expected to afford enough material to cover everything that has ever gone wrong in the Indian service, but no reference is made to any eye condition.

In the "Handbook of American Indians", by F. W. Hodge, 1907-1910, bulletin no. 30, Bureau of American Ethnology, Smithsonian Institute, there is the statement (page 541, volume 1) that "inflammation of the conjunctiva is common and often leads to ulceration, opacity, and defect or even loss of vision." Presumably it has been observed frequently. In bulletin No. 33, page 174, Ales Hrdlicka (the most reliable of all writers on medical topics concerning the Indian) states that ophthalmia and consequent blindness are common and are due to lack of personal hygiene and to irritation of the eyes from the sand. The percentage of blind in some of the tribes he found to be appalling. He mentions trachoma by name on page 189.

Again, Hrdlicka (subject matter also quoted in bulletin no. 42, Smithsonian Institute, and other bulletins of this institution) in the Washington Medical Annals, volume 4, no. 6, 1905-1906, records a report of the diseases of the Indians in the southwestern United States covering the period from 1898 to 1905, and embracing thirty-eight tribes. He mentions the great frequency of trachoma, especially among the Pueblos, in which people its results have been most disastrous. In the discussion of this paper, General Forwood added considerable valuable information, but nothing concerning trachoma. Nor did Dr. E. L. Morgan in his discussion of the same paper, yet one cannot read these discussions without being impressed with the experience and powers of careful observation of both of these gentlemen.

Obviously then trachoma is, as we maintain, a comparatively recent affliction among the Indians.

In the annual report of the Public Health Service of the Treasury Department for 1913 (pages 25, 26, 27, 28), we find some references that are very valuable in this connection. In the Act of Congress, August 24, 1912, appropriating money to the Office of Indian Affairs, was included a provision for $10,000 to enable the Public Health and Marine Hospital Service to make a thorough examination as to the prevalence of tuberculosis, trachoma, small pox and other contagious and infectious diseases among the Indians of the United States, full report to be made to Congress not later than February 1, 1913, with full recommendation as might be deemed advisable.

These investigations were begun September 28, 1912, and terminated December 30, 1912, fourteen officers being assigned to the work, a total of 39,231 Indians in twenty-five states were examined, approximately one-eighth of the entire Indian population at that time.

Of this number (39,231) examined at all the reservations and at non-reservation boarding schools, 8,940 individuals or 22.7 per cent of the entire number were found to have

trachoma. The highest percentage was found in Oklahoma, where 68.8 per cent of those examined were found to be trachomatous. In Muskogee, Oklahoma, it was found to be almost universal among the Creeks and Seminoles. In New York, only two individuals or 0.2 per cent out of 943 Indians had the disease, and these two had contracted the infection at a nonreservation boarding school. There was none among the Florida Indians. In Wisconsin, the percentage was 6.86; in Minnesota 15.5; in New Mexico 22.38; in Arizona 24.9. The disease was more prevalent in the schools than on the reservations from which the pupils were drawn. In the nonreservation schools, groups of cases existed that belonged to areas that had no trachoma. The pupils affected had contracted the disease in the schools.

No reliable data could be obtained by which the origin and duration of the disease among the Indians could be determined. On the whole it appeared that trachoma had been prevalent among the Indians in widely scattered sections for many years, but the sources of the infection, this report stated, must in all probability remain a mystery.

In the report of the same service for 1912, page 24, reference is made to a preliminary survey of conditions in Minnesota to determine the prevalence of the disease among the Indians on the White Earth and Leech Lake Indian reservations. A second survey was made by Surgeon T. Clark in October and November, 1912, and a third survey was made by Dr. Clark in February, 1913. (The results of the second survey were published as Senate document no. 1038.) This (the third) consisted of an examination of school children in the public and parochial schools, state normal schools, agricultural schools, the various penal and reformatory schools, and schools for the deaf, blind, and feeble-minded in cooperation with the Minnesota state board of health. Clark found 610 cases out of 52,847 persons of all classes, including Indians, or 1.14 per cent. The white population showed seventy-seven cases out of 49,305, while the Indians showed 533 cases out of 3,542. (Details given in Public Health Reports, June, 1913.) A skillful juggler of figures might argue the whites got the disease from the Indians.

In California, in 1912-1913, surgeon M. W. Glover made a survey reported March 28, 1913. Out of 1,478 school children only five positive cases and one doubtful case were found. There were 161 cases of folliculosis. Out of the six cases of trachoma, four were important. This survey is mentioned merely to show that California is not a trachoma state.

In Tennessee, J. W. Schereschewsky found (reported September 5, 1913) eighty-six cases out of 209 persons examined, three of which were colored children, but none of which were Indians.

In Kentucky, John McMullin found that out of approximately 4,000 people examined in the mountain district, 500, or 12.5 per cent, had the disease. Among the school children from three to eighteen per cent had the disease. None were Indians, probably for the reason that there are very few Indians in these sections. Probably similar trachoma conditions exist in the contiguous mountain districts of West Virginia, Virginia, and North Carolina. (See Public Health Report for 1913, published in 1914, page 257.)

Bridging over quite a gap in these official reports, we find in the Public Health Reports, volume 32, no. 28, July 13, 1917, the observations of Dr. John McMullin, surgeon to the Public Health Service, made in 1917, concerning the prevalence of trachoma among the Indians. At that time in some reservations he found ninety per cent of the Indians affected. This is greater that the incidence noted in the European epidemics. In a later report, (volume 37, no. 35, September, 1922) he notes the occurrence of the disease in the general population in Mitchell county, Georgia. The Span-

iards invaded Georgia in 1743, and if they are at all responsible for the introduction of the disease among the Indians there it must have been a most tardy type they implanted in Georgia, since it failed to become a problem or even a near problem until recently.

To get the proper viewpoint of the Government backed by the physicians and sociologists interested in this subject, we must go back again to the promulgation of the order by the Treasury Department, October 30, 1897, whereby through its Public Health Service it declared trachoma to be a dangerous communicable disease, and thus made mandatory the deportation of all aliens who were so afflicted, under section 2 of the immigration laws. It was this recognition by the Government, with the good results that followed it, that has tribes on the occasion of a visit to permitted the Public Health Service to exercise the beneficial, although sometimes questioned, authority it has within our own borders upon our own people.

The continual repetition of the observations of our own physicians in the field concerning the existence of the disease in different localities of our country soon brought the matter to the attention of the physicians at the Indian stations, and before long the Department of the Interior was flooded with reports of its existence among the Red Men. It was not until 1909 that it was given official recognition by the Commissioner of Indian Affairs. At this time it was referred to in connection with a special appropriation for health work.

According to the records, the Department never received very much money for the Indians, and an additional appropriation always brought good results.

At this particular time the medical service of the Indian Bureau was receiving $166,810, as compared with $122,000 in 1905. Now the propaganda created by the reports from the physicians succeeded in obtaining an additional appropriation (June, 1909) of $12,000 by Congress for the treatment of this scourge. This made possible the immediate employment of a skilled surgeon and specialist and a special nurse, and an active campaign against the disease. A hospital was opened at the Phoenix school, and was placed in charge of one of the best specialists in that part of the country. More than seven hundred cases were admitted for operative treatment during the first year. In addition to this, two expert physicians and a special nurse were placed in the field, visiting the schools and agencies. In the report of these activities for 1910, it is stated that the regular physicians had examined approximately 20,000 Indians and found that about twenty per cent of them were affected with trachoma.

Since that time the appropriation has been gradually increased until 1924, when it was $370,000. Various persons and agencies interested in the condition of the Indians have worked for these increases. The appropriation for 1925, due to the continual urging from outside sources, has been increased to $500,000. The total number of Indians of record subject to the interest of the Federal Government is 346,962, so that $1.45 is allotted each Indian for health protection. Is it enough?

By October 30, 1924, the Department had an authorized force of seven ophthalmologists and thirteen nurses who travelled throughout the Indian country treating trachoma and other eye diseases. Among the two hundred school and agency physicians there are several trachoma experts, and an effort is under way to make every Indian physician an expert. There is one ophthalmologist attached to the service who devotes his time to instructing physicians and organizing trachoma campaigns. Kindly note there are two hundred physicians to approximately 350,000 people, widely scattered throughout the country. The great wonder is that they do so well!

The Department of the Interior furnishes us with the information that on October 6, 1924, there were in the United States 346,962 Indians of record, a gain of 16,283 during the last eleven years, and a gain of 2,619 over the number reported for the year ending June 30, 1923. The state of Oklahoma leads with a population of 119,989. The main point of this record is that the Department regards this large Indian population as being as great as it ever was since the advent of Columbus.

On October 10, 1924, the Department of the Interior authorized the following information regarding its recent trachoma campaign:

"Out of the 7,014 Indians examined during the southwestern trachoma campaign inaugurated this summer by Secretary of the Interior Work and Indian Commissioner Burks, 1,563 were discovered to be afflicted with trachoma.

"All told, 1,236 trachoma operations were performed by the physicians conducting the campaign among the Indians.

"In the Navajo reservation in Arizona and New Mexico, where clinics were held, a total of 6,274 Indians were examined, and of this number 1,354 were discovered to be afflicted with trachoma. The physicians conducting the clinics performed 1,084 trachoma operations and 243 other eye operations. All told, 1,638 Indians were hospitalized.

"Clinics were also held at two places on the Hopi Indian reservation, where 740 Indians were examined and 209 found to be afflicted with trachoma. All told, 152 trachoma operations and 27 eye operations were performed on this reservation. None of these Indians were hospitalized.

"The campaign against trachoma was inaugurated on July 1, under the direction of a special physician of the Indian Bureau assisted by surgeons of the United States Public Health Service. Three operating field units were sent out to cover the Navajo, Hopi, and other Indian reservations in the Southwest. Each unit was headed by a special physician, nurses, and the necessary medical supplies. School buildings were used as temporary trachoma hospitals."

My own interest arises from personal observation among the Blackfeet Glacier National Park in the summer of 1923. By invitation of the physicians in charge of the reservation at that time I was called to inspect and operate upon a large number of the Indians afflicted at that time. This has been made the subject of a special article published elsewhere. The figures given me at that time were sufficiently startling to encourage me to take part in the propaganda for the relief of the conditions contributing to this state of affairs.

Upon a subsequent visit in the summer of 1924, I was again invited to take part in the actual work, and in this one section alone performed 120 operations. Intensive work had been done by the local physicians in the interim, with the result that more cases were discovered than had been thought to exist, although a great many of the older cases had already been treated and brought under control. The obvious conclusion reached was that the type of infection was especially virulent and was gaining headway very rapidly.

Through the courtesy of the United States Indian service, I was invited to hold a special clinic near Albuquerque, New Mexico, in January, 1925, lasting a week. This was attended by fifteen physicians of the Indian medical service from different stations in New Mexico and Arizona, who were assigned to me for instruction.

It was deemed advisable by the officials of the service to arrange this clinic after the survey which had been made by their own physicians from July 1, 1924, to November 30, 1924. This survey was made among the Indians at the Navajo reservation and showed out of 11,076 Indians examined 2,214 undeniable trachoma cases. The physicians in the service per-

formed 1,837 trachoma operations and 487 other eye operations.

The reluctance of the Indian to try anything twice prompted the physicians in charge to take measures that would insure better technique and obviate the possibility of secondary operations. It should be borne in mind that these men are not eye specialists but have developed for themselves considerable ophthalmic knowledge through sheer necessity. To that end I was invited to instruct the fifteen physicians assigned to the clinic in the technique that had met with pronounced success among the Blackfeet Indians. Necessarily the number of operations performed here did not bulk very large—perhaps 75 to 100 in all—but the enthusiasm of the student physicians and the rapidity with which they absorbed the instruction points the way to a marked increase in good results from this work in the future.

A careful perusal of all this literature, and it has been most voluminous and comprehensive, and a lot of it useless, brings several conclusions. First, the Indian enjoys no special susceptibility or immunity to trachoma. Second, there have been periodic epidemics of the disease implanted upon them from time to time during their intercourse with the whites, a different form of the same cause existing in each epidemic. These epidemics seem not to be continuous or in any way related one to the other. Third, these epidemics have run their course often without special measures directed against them. Fourth, the more intensive the surveys and campaigns the more cases will be detected, just as in the tuberculosis campaigns. Fifth, the present pandemic is an exacerbation of a previous epidemic that has not been completely eradicated. Sixth, the appropriation for the health work in the Indian service is inadequate for results comparable with those the government has been able to obtain in other health work.

No criticism is to be placed upon the personnel of the Department. They have done well. But there are not enough workers in the service, and their remuneration is inadequate to attract a sufficient number of the type of men and women the service justifies. It is to encourage attention to this phase of the Indian question that this article is written.

The present incidence of trachoma among the Indians has made this the subject of several papers by those interested, including myself, and the distribution has been stressed to the point that it is possible to account for the condition of the eyes in nearly all of the reservation Indians of record.

The problem now is, to eradicate the disease if possible and to render the foci inert for further distribution and dissemination. The thought now dominating the Indian Bureau is to treat all foci of the disease simultaneously in a radical manner. To do this it has been necessary to adopt a more or less standardized technique and to insist that each surgeon learn and apply this technique.

Being concerned mostly with the surgical aspects of the disease, it has been my privilege to instruct the surgeons of the Indian Bureau in those radical treatments that have been productive of the greatest results. In order to appreciate how these operations affect the disease it is well to understand what is being effected by the disease process when left unmolested.

The hypertrophied papillæ of the conjunctiva, especially of the upper lid, together with the gelatinous granulations and the engorged mucosa, encroach upon the cul-de-sac or fornix, and tend to eliminate this space. The stiff but unresisting tarsal plate restrains the swollen diseased conjunctiva, with the result that the pressure is directed against the globe and the lids begin to be a factor. At first this pressure excites only a congestion of the bulbar conjunctiva, but with the movements of the lids and globe the cornea is involved in the friction, and leucocytic infiltration,

ulceration, and pannus in various combinations ensue.

As the disease progresses, contraction follows, friction upon the cornea increases, and the corneal complications are exaggerated. Oftentimes long after the active disease in the upper lid has subsided and contraction has supervened we may yet have active corneal complications. Scar formation of the cornea ultimately follows and varying degrees of blindness result.

This increased lid tension, the real factor in the production of the more serious complications of trachoma, constitutes what we call blepharophimosis. In the early stages it is due to the inflammatory swelling, in the later stages to the cicatricial changes and consequent deformities of the lids. The end result of this blepharophimosis in any event is the production of a vascular type of keratitis, pannus, which if unrelieved completely destroys the transparency of the cornea and is followed by varying degrees of visual impairment. Not only is the progress of the disease attended by disturbance of sight but considerable distress accompanies it, and, while we may be actuated in our treatment by a desire for conservation of vision in these patients, we should bear in mind that we may likewise relieve them of considerable suffering.

Assuming that the case has passed out of the early stages, when local applications if persisted in might have been of value, our task is to remove the exuberant granulations which are now the dominating feature of the disease. The roller forceps may be employed to express the contents of the granulations and to render them flat, but my preference is for the procedure known as grattage. In this the lid is everted by a Darier's forceps, turning the lid a second turn with the forceps and thereby bringing into view the retrotarsal fold. It is this second turn that determines the successful issue of the operation. The granulations are then scarified by a three-bladed knife, after which the area is vigorously scrubbed with a bichloride of mercury solution on a tooth brush, and an antiphlogistic lotion applied. The reaction to this treatment is not so violent as would be imagined.

In the more advanced cases it is my practice to excise the tarsal cartilage of the upper lid with the diseased overlying conjunctiva after the method known as Kuhnt-Heisrath. It is often advisable to supplement this with a canthotomy, and sometimes a few punctures of the lids with the galvanocautery after the method of Ziegler are necessary to prevent entropion.

The surgical treatment of the disease is very satisfactory, but care must be exercised in the choice and combination of procedures in the individual case, in order not to discredit the surgery of the condition as a whole.

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CONTRIBUTION TO THE DEVELOPMENT OF THE HUMAN CORNEA

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From detailed study of embryos measuring from 18 to 20 millimeters the author presents certain views as to the development of the corneal endothelium and ground substance at this stage; such views differing from those advanced by Mann. From the division of morphology and physiology of the Physiologic Institute of Vienna.

In her recent publication, "Development of the human eye", Mann states that no true cornea can be said to exist before the eighteen millimeter stage. At eighteen millimeters a slit appears in the mesodermal lamina, separating into an anterior thicker portion (cornea) and a posterior thin layer (pupillary membrane). At twenty millimeters the cornea is thicker and the mesodermal cells form fibrils which are the beginning ground substance of the substantia propria. The cells of the deepest part arrange themselves into definite rows and become Descemet's endothelium.

It has been the writer's privilege to study several embryos in the above mentioned stages, from the valuable collection of Professor Walter Kolmer of the Physiologic Institute of Vienna; and this study has led to a different conclusion from that of Mann as to the formation of the corneal stroma.

Description of corneal development of twenty millimeter embryo, illustrations 1, 2, and 3.

Eye cup: The whole pigment epithelium is pigmented; in the anterior part the pigment lies in the inner

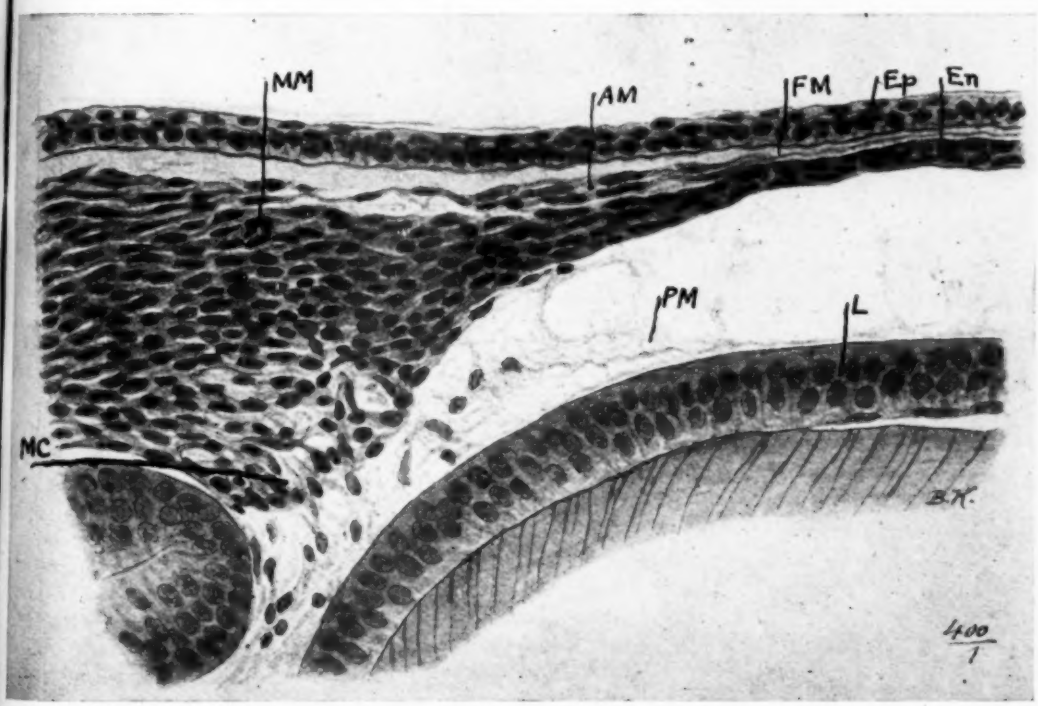

Fig. 1 (Israel). From 20 mm. embryo. Ep, epithelium. En, endothelium. Fm, fibrillar membrane. Am, mesodermal cells which advance into space between epithelium and endothelium. Mm, mesodermal mass. Mc, margin of eye cup. Pm, pupillary membrane. L, lens.

cells, in the posterior part all of the cells are pigmented. Pigment epithelium becomes thinner behind the equator and is thinnest on the posterior pole.

The retina shows in general two parts, the nuclear and the border zones. Ganglion cells are present on the posterior portion, and more in the region of the macula, but also to the nasal side. The nerve fiber layer of the retina is developing on the posterior pole about in the region of the optic nerve.

The optic nerve shows nerve fibers and can be followed backward only a certain distance.

The lens is oval in shape, and the limit of the anterior epithelium lies beyond the equator. The cavity has disappeared, but small artificial cavities can be found between lens fibers and anterior epithelium. The lens fibers next the equator are concave outward, those in the center are convex outward.

The pupillary membrane consists only of fibrils without mesodermal cells and vessels.

The cornea consists of two rows of arranged cells, the outer, or epithelium, composed of flattened and cubical cells, the inner, or endothelium, consisting of flattened cells closely arranged. In some sections the cells of the endothelium are so crowded that they have an irregular arrangement.

Between the epithelium and endothelium is a space in which can be seen a fibrillar membrane without cells, although in the periphery of this space can be found oblong cells arranged in files and obviously advancing toward the center of the space from mesoderm which also later forms the conjunctiva bulbi. This fibrillar membrane would seem to be the pathway for these advancing oblong cells, which lie partly on the inner and partly on the outer side of the fibrillar membrane as they advance.

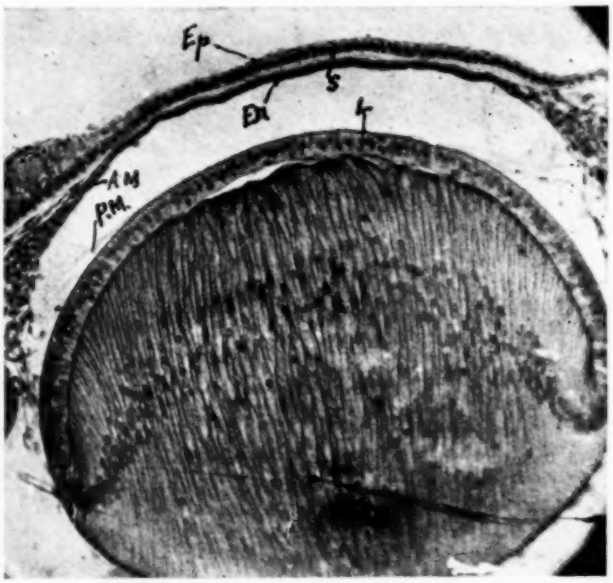

Fig. 2 (Israel). From 20 mm. embryo (medium power). Ep, epithelium. En, endothelium. S, space with fibrillar membrane. Am, mesodermal cell which advances into space between epithelium and endothelium. Pm, fibers of pupillary membrane. L, lens.

These so-called advancing cells have a different shape. They are oblong and have lighter staining nuclei than the mass of mesodermal cells from which they come. Both epithelial and endothelial layers have thin basal plates differentiated in this stage.

The vitreous consists of a network of fibers. In the anterior part mesodermal cells advance over the margin of the eye cup, between it and the equator of the lens. Some connections of the vitreous with the retinal cells can still be found. The vitreous fibers are more concentrated in the periphery than in the center of the vitreous chamber.

Choroid and sclera are not differentiated from each other; the choroid consists only of choriocapillaris. In the anterior part of the eye cup, the mesodermal cells are more concentrated, later forming the sclera.

Near the center of the cornea is a cell lying immediately behind the ectoderm in the space and on the fibrillar membrane; another one is beginning to separate from the endothelium, going into the space between epithelium and endothelium. These cells have round nuclei quite different from the laterally advancing cells with oblong nuclei.

Description of corneal development of twenty millimeter embryo, illustrations 4 and 5.

The stage of development is essentially the same as in the twenty millimeter embryo already described. The cornea shows the two rows of epithelium and endothelium, each of which has its own basilar plate developed, and in the space between the wavy fibrillar membrane is found. We find fibrils running across the space connecting the basilar plates with the wavy fibrillar membrane lying in the space.

In these sections the mesodermal cells are not seen advancing as yet into the space, but oblong cells can be distinguished lying at the periphery, although not arranged in advancing rows.

In one section a few cells can be seen in the space between the fibrillar membrane and the inner layer, cells pushed out from the endothelial layer,

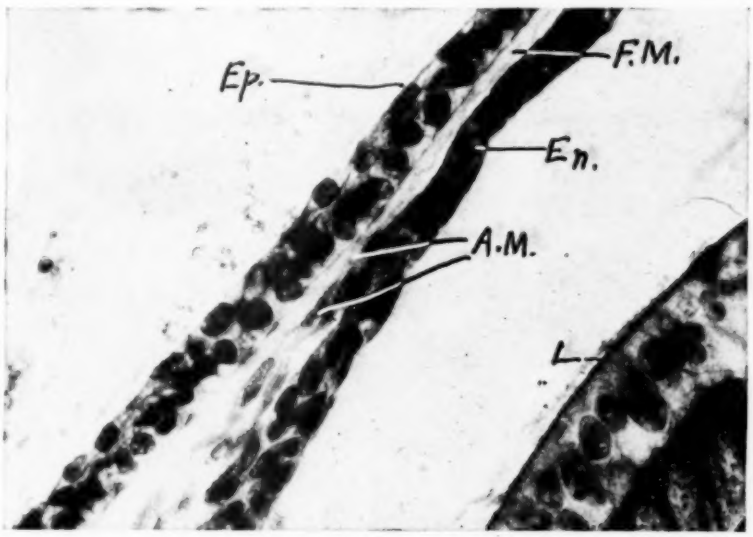

Fig. 3 (Israel). From 20 mm. embryo (high power). Ep., epithelium. En., endothelium. F.M., fibrillar membrane in the space between epithelium and endothelium. A.M., mesodermal cells advancing into the space. L, lens.

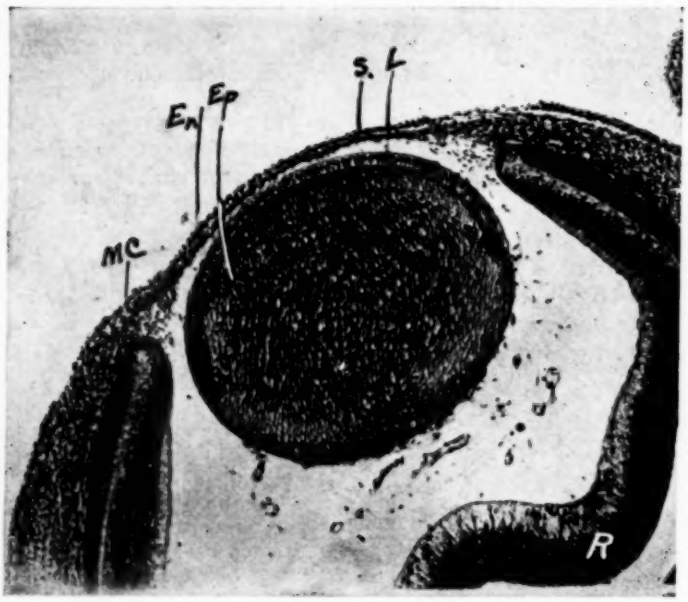

Fig. 4 (Israel). From 20 mm. embryo (medium power). Ep, epithelium. En, endothelium. S, space between epithelium and endothelium. L, lens. R, retina. Mc, margin of eye cup.

probably by the crowding in of this layer.

Description of corneal development of nineteen millimeter embryo, illustrations 6 and 7.

In general the development is the same as in the twenty millimeter stage. On the margin of the eye cup is a coloboma corresponding to a part of the primitive pupil.

The cornea shows two layers, but the cells of the endothelium are not so regularly arranged, especially in the periphery, as in the twenty millimeter stage. The space between

Fig. 5 (Israel). 20 mm. embryo (high power). Ep, epithelium. En, endothelium. S, space between epithelium and endothelium. C, cell lying in the space, separated from endothelium. L, lens.

epithelium and endothelium is not so well seen, as these two layers lie close together, but fibrillar membrane can be seen in the space between the two layers, especially where artificial separation has taken place.

In the same sections we find behind the surface ectoderm at the level of the margin of the eye cup some cells arranged in rows on the fibrillar membrane, but they have neither the oblong shape nor the clearly stained nuclei of the advancing cells of the pole is a group of degenerating lens cells, and corresponding in position to this is a concavity in the lens fiber substance. These degenerating cells prevent the closure of the lens cavity at this spot.

At eighteen millimeters we find surface ectoderm, and between it and lens a mass of mesodermal cells of irregular form. The endothelium is not differentiated and there are no signs of the later fibrillar membrane below the epithelium.

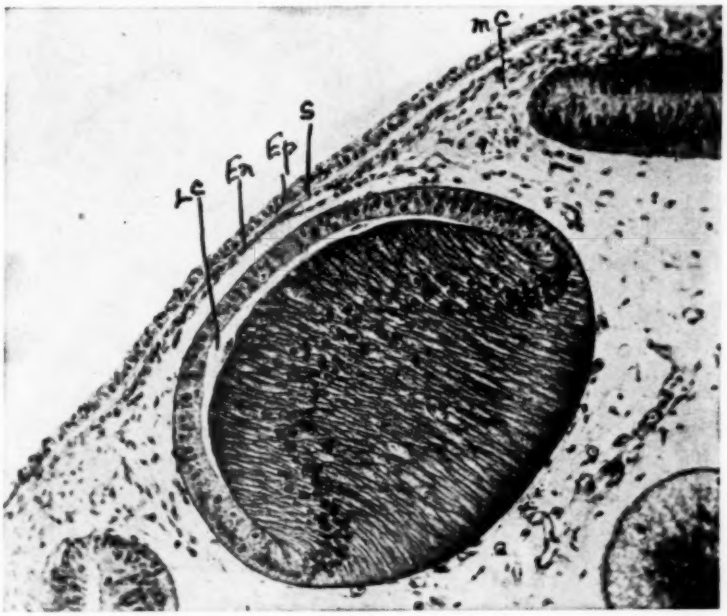

Fig. 6 (Israel). From 19 mm. embryo (medium power). Ep, epithelium. En, endothelium, cells not yet well arranged. S, space betwen epithelium and endothelium with fibrillar membrane. Lc, lens cavity showing degenerating cells. MC, margin of eye cup.

twenty millimeter stage. We may suspect that these are the same cells as those, which at twenty millimeters form the advancing cells of the corneal stroma. We found no cells separating from the endothelium into the space, as in the twenty-millimeter embryo.

Lens: In most sections we still find a lens cavity, but it is probably formed by artificial shrinking of the lens substance. On the back of the anterior epithelium near the anterior

Conclusion: Contrary to Mann's views we have found that all the mesodermal cells between ectoderm and lens in the eighteen millimeter stage must be used for formation of the endothelium and none for the ground substance of the cornea, because both in the nineteen and in the twenty millimeter embryo we have a stage in which we find only two sharply differentiated rows, one epithelium, the other endothelium, with a definite space between. This space

contains a fibrillar membrane in which no cells are found.

The stage above described lasts only a short time, and a little later some of the peripheral mesodermal cells of the undifferentiated mesodermal mass which later forms the conjunctiva bulbi probably advance into this space between epithelium and endothelium. The fact that the so-called advancing cells are not positively found in the nineteen millimeter stage, but that these cells of special shape and staining are found in the twenty millimeter stage, would indicate that we have here cells especially differentiated to form corneal stroma.

Seefelder and Fisher have described the formation of corneal stroma in this manner in the twenty, twenty-one, and twenty-two millimeter embryos, but there is a possibility that stroma cells may also have their origin from cells separating from the endothelium and going into the space to form corneal stroma.

We found in two cases at twenty millimeters cells lying in the middle of the corneal anlage in the space between fibrillar membrane and endothelium, that is in the stage where the so-called advancing cells have not reached the middle portion of the cornea. Therefore, we think these cells must be of endothelial origin. We do not know whether these cells are later changed into fixed corneal cells or undergo degeneration.

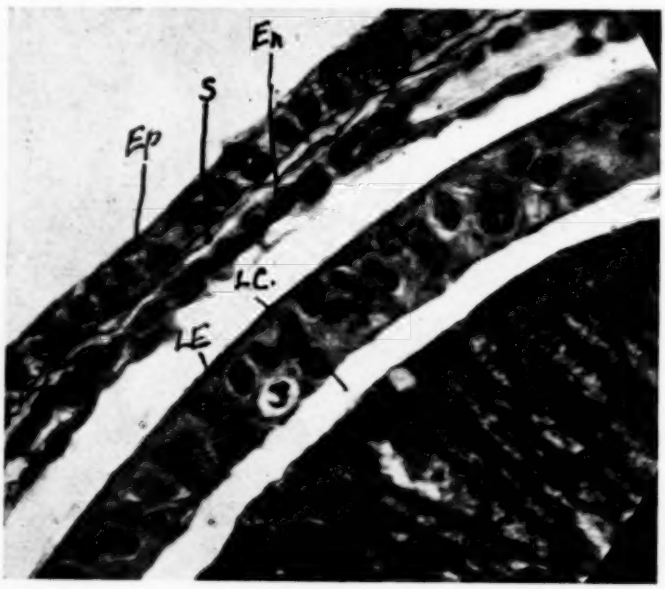

Fig. 7 (Israel). From 19 mm. embryo (high power). Ep, epithelium. En, endothelium. S, space between epithelium and endothelium. LE, lens epithelium. LC, lens cavity.

The corneal stroma not only could be formed by division of the advancing cells, but also from these cells of endothelial origin.

In our sections of embryos of nineteen and twenty millimeters, the pupillary membrane is difficult to recognize, but no vessels nor mesodermal cells are to be found in it. The pupillary membrane is without vessels and mesodermal cells until twenty-four millimeter development is reached.

2001 Esperson building

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OBSERVATIONS FROM ROUTINE BACTERIOLOGICAL EXAMINATION OF CONJUNCTIVITIS CASES

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Acute conjunctivitis in the Montreal area is generally due to the pneumococcus, the influenza bacillus taking second rank. Of the total number of cases of conjunctivitis, by far the most prevalent form is due to the Morax-Axenfeld diplobacillus, usually manifested in a chronic catarrhal conjunctivitis, but not infrequently in an acute type which may be complicated by corneal ulcer or by absorption iritis. In the Morax-Axenfeld cases the diplobacillus is found constantly in the nose. The value of an epithelial cell smear in the pneumococcic cases is emphasized. From the department of pathology, the Montreal General Hospital.

In a busy outdoor clinic such as the one at the Montreal General Hospital, the bacteriological examination of conjunctivitis and other cases consists generally in making a film or smear, though frequently the examination is carried much farther than this. It is surprising how much assistance, at times, one may derive from the ordinary film examination done in the proper manner. This consists in smearing a clean slide carefully with some of the discharge, and staining preferably by Gram's method. A negative result should always be followed by an epithelial cell smear, stained by Giemsa's or Wright's solution. To get a satisfactory epithelial cell smear, one should proceed as follows: A drop or two of four per cent cocain solution is instilled in the conjunctival sac, and after a few minutes the conjunctival surface is gently stroked with a small blunt curette. If this is done carefully, sufficient material will be obtained without any bleeding, and this is to be desired. The material is spread gently over the slide, is allowed to dry, and is then fixed by immersing for a few minutes in eighty per cent or absolute alcohol. The dried slide is then stained with Giemsa solution, one in twenty parts of distilled water for twenty minutes. This method will give one a very satisfactory differentiation between microorganisms and cell cytoplasm. Not infrequently the epithelial cell smear wil give one a positive result where examination of the pus proved negative.

In a period extending over a number of years, many hundreds of examinations have been made. Records of the following have been retained:

Organism	Times found
Diplobacillus of Morax-Axenfeld	1110
Pneumococcus	276
Gonococcus	35
Koch-Weeks bacillus	10
Bacillus influenzæ group	88
Streptococcus	71
Micrococcus catarrhalis	52
Bacillus xerosis and gram-positive cocci	568
Staphylococci of different kinds	381
Bacillus coli communis	5
Bacillus subtilis	5
Bacillus pyocyaneus	1
Bacillus mucosus capsulatus	1
Bacillus proteus	1
Negative films	501

In a series of ophthalmia neonatorum:

Organism	Times found
Gonococcus	43
Streptococcus pyogenes	6
Pneumococcus	8
Staphylococcus	5
Micrococcus catarrhalis	2
Diplobacillus of Morax-Axenfeld	2
Bacillus coli communis	1
Trachoma bodies	6
Negative	1

In cases of purulent dacryocystitis:

Organism	Times found
Pneumococcus	23
Streptococcus	6
Diplobacillus of Morax-Axenfeld	7
Bacillus influenzæ	2
Bacillus xerosis and cocci	3

In cases of phlyctenular conjunctivitis:

Organism	Times found
Diplobacillus of Morax-Axenfeld	28
Staphylococcus	14
Streptococcus beta	1
Bacillus xerosis	2
Negative	32

As will be seen from the list of conjunctivitis cases, the microorganisms most frequently found in the Montreal area are the diplobacillus of Morax-Axenfeld, the pneumococcus, and the bacillus influenzæ. The preponderance of the diplobacillary form in this area, though still very great, does not seem to me so marked as in former years. This may be due to the fact that since the war our clinic has been much less cosmopolitan: it may be also that we are not now examining a large number of comparatively mild cases, where the diplobacillus is frequently found.

Acute conjunctivitis in this area is generally caused by the pneumococcus. The Koch-Weeks form is very rarely seen. This sectional variation in the cause of acute conjunctivitis has been noted by numerous writers.

Pneumococcus conjunctivitis is supposed to occur more often in northern climates, and at the cold season of the year. This latter statement is not borne out by our experience in Montreal. Here it occurs as the acute epidemic form of the spring and of the early warm season. The onset is generally sharp, with both eyes soon involved. It seems to vary considerably in severity in different places. Gifford of Omaha, who originally established the definite proof of its infectiousness, by inoculation on the human healthy conjunctiva, has frequently met with a severe form there. With us the clinical picture has been one of an acute purulent conjunctivitis occurring chiefly in the spring among children and adults alike. Inflammatory signs may be slight, and the disease run a short course, but as a rule it is severe and is marked by swelling of the lids, with profuse mucopurulent discharge. Small conjunctival hemorrhages are frequently seen, and "phlyctenules" at the corneoscleral margin are not uncommon.

We had in Montreal, in the spring of 1928, a large epidemic of pneumococcus conjunctivitis which ran a very severe course. The first few cases observed by the writer were thought, from the clinical picture, to be gonorrheal ophthalmia, but a film soon showed the infection was a pneumococcal one. In the severe form it seems to reach its height in five or six days, and after this there is a decided lessening in the inflammatory symptoms. Corresponding to this change Axenfeld[1] has shown that there is a lessening in the number or a complete absence of pneumococci. Here is where error as to the etiological factor is liable to occur. Examining the discharge at this time, we shall find the ordinary pyogenic organisms, with the result that the inflammation will probably be attributed to them. The diagnosis can be easily effected by making a film

[1] Axenfeld: Die Bakteriologie in der Augenheilkunde.

preparation in the manner already described, and staining by Gram's method. During the onset of the disease pneumococci in large numbers will be found, giving one a very pretty specimen. The Gram-positive lanceolate diplococci will be found lying free or in the leucocytes. They are generally elongated and often vary in size. A difference in the size of the two cocci is not infrequently noted. They may occur in chains and vary a great deal according to their source. The pneumococcus stains readily with any of the aniline dyes, and is positive to Gram's stain. If the film examination proves negative, an epithelial cell smear is strongly advised, also the inoculation of media.

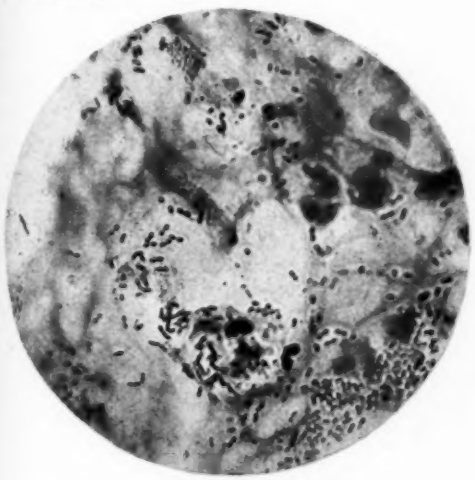

Fig. 1 (McKee). Typical pneumococcus film (× 1500).

The treatment of pneumococcus conjunctivitis consists in the use of some germicide, with the ordinary measures adopted in conjunctivitis cases. In some clinics pneumococcus serum has been used, and some colleagues praise highly the results from optochin in one percent solution.

During the routine examination one finds at intervals quite interesting details. A case with a negative smear was further examined by inoculating blood agar plates with some of the tears which had been added to a tube of bouillon. After twenty-four hours incubation there were seen about twenty colonies of greenish hue with hemolysis, i.e. Streptococcus alpha. There were no other microorganisms present.

In a second negative case tears were plated in a similar manner, and about ten colonies with hemolysis were found.

In still another case, the blood-agar plate presented a beautiful picture made by about thirty colonies, with a marked greenish hue about the hemolysis.

Another case showed after forty-eight hours forty colonies with greenish discoloration, i.e. Streptococcus alpha. The blood serum tubes inoculated showed Morax diplobacilli.

A patient, D.F., was sent from the genitourinary clinic with an acute conjunctivitis, catarrhal in degree. As the man had a urethritis, it was thought the conjunctivitis might be metastatic. The smear, however, revealed numerous diplobacilli, and the conjunctivitis reacted quickly to the usual treatment.

Of interest was a case "L", with a definite conjunctivitis with a negative film. An epithelial cell smear showed the epithelial cells filled with pneumococci.

Another case where the Morax diplobacilli were seen in the smear was found to have had a pneumococcus infection the year previously.

In case "S" with conjunctivitis with a negative film, blood-agar plates were made from some of the tears. About twenty colonies with hemolysis and greenish hue, Streptococcus viridans or alpha, were found. There were no other microorganisms present.

The following case shows that the Morax organism may often be complicated by a second infection without our knowing it. A case "D" showed a few diplobacilli in the film. Blood serum tubes inoculated gave a good growth of the diplobacilli. Blood-agar plates were also inoculated, and after refrigeration numer-

ous colonies with hemolysis but no discoloration, Streptococcus beta, were found.

The following case shows one how long gonococci may remain as parasites on the conjunctival epithelial cells. An adult male was admitted to the hospital on January 2, 1924, with a gonorrheal ophthalmia on the right side. He was treated constantly in the routine way, and for some days had two per cent silver nitrate. On February 6, i.e. the thirty-fifth day of treatment, he was ready to leave the hospital. Discharge had ceased some days previously, and examination for gonococci proved negative. I now made a smear of epithelial cells, and stained with Giemsa, and was surprised to find numbers of cells with gonococci in them. The conjunctiva was then wiped dry, and with a stiff platinum wire the conjunctiva was firmly rubbed so as to obtain epithelium, and the material put on two tubes of hydrocele agar. A beautiful pure growth of gonococci was obtained in each tube.

Mueller first reported having found a small bacillus in the secretion of trachoma cases, which he differentiated from the Koch-Weeks bacillus, but did not recognize as the bacillus influenzæ. With careful examination and exact methods it will be found that the microorganisms of the influenza group are frequently the cause of conjunctivitis. It is a very tiny, moderately thick microorganism, with rounded ends, and not infrequently, especially after cultivation, gives one the impression of small cocci. It is cultivated best on blood-agar, especially that made with pigeons' blood, which is rich in hemoglobin. The conjunctivitis set up is the acute form, very frequently seen in children, and characterized by marked involvement of the palpebral conjunctiva, with quite a profuse discharge. A smear made from the discharge will show large numbers of these tiny microorganisms. The course is comparatively mild, without complications.

Diplobacillary conjunctivitis is probably the commonest and most widely spread disease of the conjunctiva. In Montreal it is by far the commonest form seen. The examination and observation of over 1100 cases here has been a most interesting clinical experience. It occurs at all seasons of the year. Of 250 consecutive cases seen at the Montreal General Hospital, seventeen per cent were in January, while in the months of November, December, January, February, March, and April forty-eight per cent of the series presented themselves. It is thus a disease frequently seen in the cold and winter

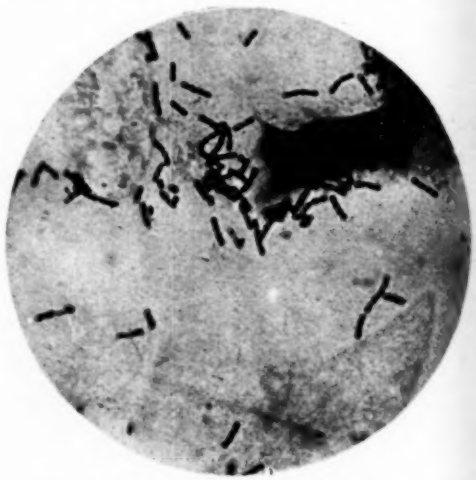

Fig. 2 (McKee). Typical Morax-Axenfeld film (× 1500).

season. It is no respecter of age nor nationality. Clinically one gets variations from the picture of a mild catarrhal inflammation with reddening at the canthi (angular conjunctivitis) to quite purulent conjunctivitis, with marked blepharitis.

With clinical types so varied, and with such numerous associations as this form of inflammation has, it will be readily seen that a diagnosis can only be made by bacteriological methods. If a properly made film be stained by Gram's method, and examined with the oil immersion lens, the etiological factor will be easily found. When present it is usually

in sufficient numbers, so that there is no doubt about it. The cause of this form of conjunctivitis is a diplobacillus, which has very definite morphological and cultural features. It is a large Gram-negative bacillus, two to three microns long by one and one-half wide. They vary in size, look square-ended, and often have the appearance of a capsule. The diplobacillus grows best at body temperature on alkaline blood serum.

Ulceration of the cornea is a complication of diplobacillary conjunctivitis which should be borne in mind. In a former article, the writer[2] reported a series of sixty-two cases in which the ulcer was definitely due to this microorganism. Since that report we have seen numerous cases and I believe this a much commoner complication than is usually thought. It is not only the catarrhal ulcer which is seen, but on numerous occasions we have met the serpiginous type due entirely to the Morax-Axenfeld diplobacillus.

Absorption iritis, while a rare complication, should be borne in mind. I feel positive that the subjective symptoms in this form of conjunctivitis are much more severe than is generally supposed. Not infrequently patients come complaining of great discomfort in near work, where no error of refraction nor muscle imbalance can be found. The accompanying hyperemia is due to a diplobacillary infection, and treatment of this condition relieves the symptoms.

The two following cases were of interest. A patient "G", eight years of age, was brought in with a purulent dacryocystitis of the right side. A film was made from some of the regurgitated pus and was found filled with diplobacilli. As a rule, if diplobacilli are not found in the smear, the chances of finding them in the culture are small. However, case "H", with blepharoconjunctivitis, revealed no diplobacilli in the smear, but from two or three pockets in the blood serum numerous microorganisms were found.

The true appearance of the tarsal conjunctiva in this form of inflammation is nodular. The essential lesion is in the subepithelial layer and consists of a mild chronic inflammatory process as shown by increased connective tissue, infiltration with lymphoid and plasma cells, and a larger number of eosinophiles. Occasionally, a section through a Meibomian gland goes through the duct, but this is a normal occurrence and shows no contraction of connective tissue. Diplobacilli may be demonstrated on the surface of the epithelial cells and in the deep parts of the subepithelial tissue.

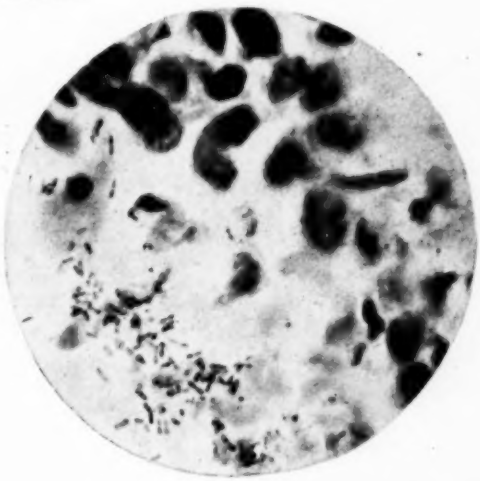

Fig. 3 (McKee). Diplobacilli in the epithelial tissue (× 1500).

The treatment par excellence in Morax-Axenfeld conjunctivitis is frequent instillation of a solution of sulphate of zinc. I prefer the weaker solution, especially in private practice; an eighth to a quarter grain to the ounce is a satisfactory strength. The drops need to be used generously and for two or three weeks, as otherwise the condition is only improved and not cured. Ulceration of the cornea due to this infection reacts well, too, to sulphate of zinc.

We have, then, in Morax-Axenfeld conjunctivitis an exceedingly chronic

[2] McKee: The American Encyclopedia of Ophthalmology, vol. 2.

affection of the conjunctiva, a form which varies greatly in its clinical picture, to such an extent that a diagnosis must be made by a bacteriological examination.

Conclusions

Acute conjunctivitis in the Montreal area is generally due to the pneumococcus, secondly to the bacillus influenzæ.

Koch-Weeks conjunctivitis is very seldom seen here.

The pneumococcus form varies a good deal in severity from season to season.

An epithelial cell smear is often very useful in the pneumococcus infections.

By far the most prevalent form in this area is the Morax-Axenfeld. Many of these patients have marked subjective symptoms.

It is a chronic catarrhal form, but not infrequently it is seen in a most acute form.

It is often met with during the cold and winter season, and may be complicated by ulceration of the cornea or by absorption iritis.

Diplobacilli will be found constantly in the noses of these patients.

We have in sulphate of zinc a specific for this form of infection.

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MODERN VIEWPOINTS AS TO THE MECHANISM OF GLAUCOMA

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Recent views as to the mechanism of glaucoma are discussed. It is suggested that the "dark-light" test, or a study of the extent to which tension varies as between prolonged confinement in darkness and exposure to light, may be very valuable in the observation of certain glaucoma patients, a glaucomatous diathesis being manifested by rise of tension after a prolonged stay in darkness. The theory of Leber is still the most logical working hypothesis. From the department of surgery, University of Chicago. Read before the Chicago Ophthalmological Society, November 19, 1928.

We have not yet arrived at a point where we are able to make final statements about glaucoma. The last fifteen years have brought out so many new facts that the true nature of the disease seems very complicated at this time. If we recall the many different paths ophthalmology has taken in the study of glaucoma, all the methods which have been devised and applied, it is very hard to separate the valuable and permanent results from the worthless and extravagant ideas. Nevertheless, I believe it is possible to talk of glaucoma with a certain amount of satisfaction if we stay within definite limits.

In the first place we should limit ourselves to the standpoint of the clinician. In the second place we should confine our considerations to the glaucomatous eye. For the clinician, a simple scheme is necessary. He cannot depend upon a too complicated system, in deciding about the classification of a case. Therefore, I am not very much in accord with the formula given by Elschnig in his book on the pathology of glaucoma, because too many factors are included which are not important in glaucoma.

According to Elschnig ten different factors have to be considered: secretion, nervous stimuli, blood pressure, exertion, difference of tension in the anterior chamber and in the intraocular veins, osmotic pressure, lymph pressure, volume of intraocular tissues, volume of eyeball, and elasticity. It would be a hard task to remember all these factors in deciding about the pathogenesis and the treatment of a case. There is no doubt that most of these factors do not give us much practical information about glaucoma.

The German, French, and English

schools have agreed that osmotic pressure does not play any rôle in the etiology of glaucoma. Lymph pressure is a very mysterious term, secretion has never been proved. Seidel and his school claim that aqueous fluid can not be formed without vital forces. It has not yet been proved whether Seidel is right or wrong, therefore the process of formation of aqueous should not be called secretion. We will not talk about excretion, because that term is used for the action of the kidneys and other glands.

We shall speak of inflow and outflow, and all other factors are implied in the phrase blood volume, that is, the part of the volume of the eyeball which is filled up with blood. I think these three factors will explain most of the phenomena one can observe in his patients. I shall have to prove that, but before doing so I should like to say a few words about inflow and outflow.

Inflow implies that some kind of fluid leaves the blood stream and enters the posterior chamber, passing through the lining membrane formed by the walls of the capillaries of the ciliary body. An important question is, would it be possible to get an idea of the size of this membrane? If we constructed a large model of the ciliary body we should be able to measure the exact surface where an exchange of water and dissolved agents between blood and aqueous is possible; but at the present time we have no exact figures.

If one compares the surface of the ciliary body with the surface of the canal of Schlemm, it will be admitted that the surface of entrance is much larger than the surface of exit. Let us now consider the forces which act on these surfaces:

Capillary blood pressure minus colloidal osmotic pressure	Intraocular pressure plus "watertightness" of epithelium and endothelium
Venous blood pressure minus colloidal osmotic pressure	

In 1919 a Japanese author, Fusita, found that the blood vessels of the ciliary body were unique in one way. In all other parts of our body we have arterioles, that is, very fine arteries wherein the greatest fall in pressure takes place. Fusita showed that the ciliary arteries did not have any real arterioles, therefore the formation of capillaries is very sudden in the eye, so that we have to expect a higher capillary pressure in the eye than in the other organs, and we should not apply Krogh's figures to the eye.

After fifteen years of very successful research we have come to the final conclusion that we are not able to determine the capillary blood pressure directly. Dieter has devised a method for determination of the capillary blood pressure which gives constant and rather accurate results; yet we do not know what we really measure. It may be the diastolic arterial blood pressure in the retinal arteries (Baurmann) or it may be the capillary blood pressure. We have no means to decide that question.

Duke-Elder has worked out a very delicate method for determination of the arterial and venous blood pressure, but he cannot give any experimentally found figures about the capillaries. He thinks the pressure is around fifty millimeters of mercury. Different figures were advanced by Seidel in Germany and Bailliart in Paris, but they did not consider the work of Fusita. If we agree with Seidel and reckon the capillary pressure as thirty millimeters, and subtract the colloidal osmotic pressure of the blood (twenty-five millimeters), then there is nothing left for the formation of aqueous and we have to rely upon vital forces.

Duke-Elder states that there is equilibrium between the blood and the aqueous. He believes that the capillary pressure is about fifty millimeters; subtracting twenty-five millimeters for the colloidal osmotic pressure leads to a hydrostatic pressure of twenty-five millimeters in the capil-

laries, and the same pressure is found inside the eye. Everything in the capillary region is very transitory, pressure and volume fluctuating up and down. Therefore we should not think of a permanent, undisturbed equilibrium, as this is a very occasional state.

It is somewhat easier to consider the outflow. The canal of Schlemm really communicates with the anterior ciliary veins. One would expect to find blood in the canal if there were free communication, but all the newer clinical methods have shown that under normal circumstances the canal carries colorless fluid. Most authorities have said that it must contain aqueous. The free communication with the blood stream suggests that we have plasma or plasmoid fluid there.

The canal of Schlemm is separated from the anterior chamber by the meshwork of the cribriform ligament. The intraocular pressure is a little lower than the pressure in the ciliary veins, but there is no equilibrium, because the colloidal osmotic pressure of the blood or of the plasmoid fluid in the canal of Schlemm tends to suck up fluid from the eye. A bloodless eye, however, has a pressure of ten or twelve millimeters, in other words the cells which line the angle of the anterior chamber must be water-tight to a certain extent. They do not allow fluid to pass below twelve millimeters of mercury.

The balance of pressure in the angle of the anterior chamber is determined by the colloidal osmotic pressure of the blood on one side (20-25 mm. of mercury) and by the water-tightness of the endothelium (around 12 mm.) on the other side. The latter factor is not subject to exact measurement. Anyway, an excess of pressure of about five millimeters is to be expected which will suck up fluid from the eye.

These physical and chemical considerations seem to indicate that we have a leak in the eye, that we constantly lose fluid. The outflow, however, would not amount to much, because the surface of outflow is much smaller than the surface along which the compensating inflow is thought to take place. It is easily seen that these physicochemical considerations do not lead to a decision of the fundamental question whether there is a constant very, very slow stream of fluid going through the normal eye or no stream at all.

Our measurements are not accurate enough to reveal or to rule out a difference in pressure of three or four millimeters between the capillary system and the posterior chamber. Three or four millimeters of pressure, however, would be sufficient to cause a very slow constant stream. Therefore we have to postpone our decision as far as the normal eye is concerned.

The two factors, inflow and outflow, can be demonstrated very easily on eyes which show a typical glaucomatous diathesis, on eyes with very shallow anterior chamber. These eyes are not very common, we see them in about seven to ten per cent of all glaucoma cases. They may have normal tension and normal optic nerves, but they show a positive dark-light test. The tension shows a rise if the patients are left in a dark room for an appreciable time (an hour and a half, for instance). On bringing them into the light, the tension will go back to normal in the same length of time.

Careful studies carried out by Seidel and Serr have proved that a change in the diameter of the pupil accounts for the rise of tension. Therefore one will find cases with glaucoma and a shallow anterior chamber, but with a negative dark-light test, because for some reason or other the size of the pupil does not change.

How can we explain the rise of tension in these cases? The very moment we dilate the pupil above a certain diameter, we get blocking of the angle of the anterior chamber. If there were no constant inflow the tension would not go up immediately after

the blocking. In most of Seidel's and in our cases the dark-light test was repeated several times within a week and always showed the same result if the pupil changed its width to the same degree.

I should say, therefore, that in these cases of glaucomatous diathesis the mechanism of glaucoma is impeded outflow due to dilatation of the pupil, with a constant inflow into the eye. Some of the cases which we observed showed a greater rise of tension during the dark-light test with the lapse of time, which means that the glaucoma was progressive in these eyes. Either the amount of inflow is gradually increasing or the formation of a peripheral anterior synechia leads to anatomical obstruction of the angle of the anterior chamber. I think the test is very valuable in watching the progress of glaucoma patients. Besides, the dark-light test is the only physiological experiment which allows us to see the mechanism of glaucoma in these cases.

Another view as to the dark-light test has been offered by Feigenbaum, who believes that the rise of tension is due to changes of the blood volume inside the eye, which occur under the influence of light. After careful study of Feigenbaum's cases, I came to the conclusion that he misinterpreted some of his cases and that a few others did not belong to the group to which Seidel and Serr confined their statements.

How about simple glaucoma with deep anterior chamber? Dilatation of the pupil has no influence on the tension. Can we prove that there is an increased inflow? We have a test now which shows this clearly, namely, puncture of the anterior chamber with a needle and careful observation of the tension afterward. If this is done on a normal eye, one finds that the tension returns to the normal level in about two hours. If done in a case of simple glaucoma with normal tension, one gets a pressure of fifty to sixty millimeters after one and one-half to two hours.

Not only is the level different after two hours as between normal and glaucomatous eyes; but the latter show a much faster rise even within the physiological range of tension, which I think proves the increased inflow in the glaucomatous eye. Can we prove that there is a decrease in outflow? There is another test which can be very easily done, namely to put the tonometer with the ten or fifteen-gram weight on the cornea and leave it there for a while. In most patients with simple glaucoma the tension does not go down at all, while normal eyes show a marked drop. By this means one can demonstrate that there is some sort of obstruction in the outlet of the eye. We do not find peripheral anterior synechia in these cases, but we know that there are fine changes in the lamellæ of the cribriform ligament which probably account for the disturbance in the outflow.

We have used the term "increased inflow" several times without saying anything about the cause of it. If we just assume that the ciliary body is more active in these cases, that it secretes more fluid, we must not think that we have solved the problem. The glaucomatous ciliary body seems to be in an atrophic condition at a relatively early stage. Therefore it seems much more logical to call the condition increased permeability of the lining membrane on the basis of increased vascular irritability. These changes may be functional in some cases, consisting of anomalies in function of the vasomotor nerves (Thiel, Dieter), or anatomical in many other cases. Since the work that was done by Wessely, the pioneer on this subject, the vasomotor and vascular factor in the mechanism of glaucoma has been fully recognized.

The purpose of this paper is to suggest the use of a simple scheme of the mechanism of glaucoma in the management of glaucoma cases, a scheme which considers the needs of the practitioner and fits in with modern experimental findings.

After about twenty-five years of intensive work on the problem of glaucoma we have come to the conclusion that the idea of Theodore Leber is still a good working hypothesis. I think we should not be ashamed that we have not been able to make any important contribution to the old idea. We should rather admire the genius of Leber and be gratified as to the stability of our problem.

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BASAL-CELL PAPILLOCARCINOMA AT THE LIMBUS

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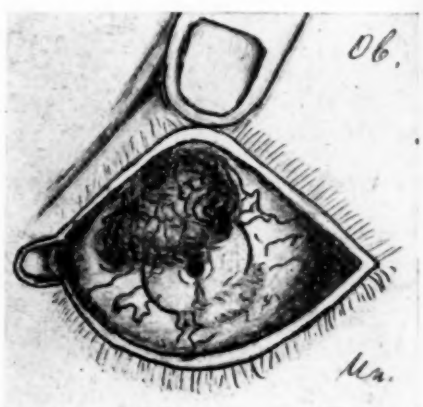
(Translated from the author's manuscript.)

In a woman of fifty years a cauliflower-like growth at the corneal limbus was excised, and the galvanocautery was applied to the base of this growth and to an extension on the opposite side of the cornea. Several applications of roentgen radiation were given. The cornea generally had been obscured by a pannus-like opacity, but became so much clearer that vision improved from light perception to 3/50. Microscopically the excised growth was found to be a basal-cell carcinoma.

Carcinomata very rarely originate in the conjunctiva of the eyelids, of the semilunar fold, or of the lacrimal caruncle, arising much more frequently from the corneal margin and its vicinity. These growths, taken as a group, are spoken of as epibulbar tumors, carcinomata, or sarcomata. To establish a differential diagnosis between papilloma and carcinoma is often rather difficult, although the first never penetrates into the depth of the corneal tissue, has a cauliflower or strawberry appearance and undergoes fungoid growth across the limbus without blending with the latter. In the case which is about to be described, all these characteristic features could be demonstrated, although under the microscope the carcinomatous character of the growth was unmistakable.

On August 22, 1928, a woman of fifty years came to my department with the complaint that two years earlier a small red spot surrounded by a white halo had begun to develop on her left eye. Her whole eye slowly became red, and the nodule gradually spread over the entire cornea, until the vision of the eye was completely lost. Upon examination I found the right eye quite healthy. The lids and the lacrimal apparatus of the left eye were normal. The tarsal conjunctiva of this eye was injected, and in the transitional fold there was a purulent secretion. Upon the limbus, upward and inward, was a grey-red, very vascular, soft, fleshy structure of the size of a hazel nut, and having an irregular cauliflower-like surface. A thin bridge led to a mass of similar appearance and like consistency which straddled the lower outer corneal margin like an epaulette. With the exception of the upper outer quadrant, the whole cornea was obscured by a pannus-like formation.



Papillocarcinoma at the limbus (Fejer).

The accompanying sketch, by my assistant Dr. Hollós, shows the approximate localization and appearance of the growth. It was impossible to see the interior of the eye, vision was light perception, localization good. Two days later I removed the tumor in its entirety, cauterizing its base and also the tumor mass at the lower outer corneal margin with the galvanocautery. Nowhere was there any trace of penetration into the interior of the eye. Removal of the spongy fleshy growth with scissors and corneal knife proceeded quite easily. Prompt healing; the eye appears free from tumor tissue, its surface is entirely smooth. The excised tumor tissue was examined by Professor Johann, who made a diagnosis of basal-cell carcinoma, although this tumor grew rather superficially than deeply; its malignancy appeared to him to be positively demonstrated by markedly atypical proliferation of the epithelium.

The patient was submitted to thorough general examination, especially with regard to metastases. The liver could be palpated, the margin being especially sharp; symptoms which seemed rather to point to cirrhotic change than to tumor metastasis. The urine was negative. The patient left my department at the end of two weeks, after a therapeutic roentgen radiation of one hundred per cent H.E.D.

The roentgen application was repeated six weeks later. At this time the cornea had an irregular surface, full of opacities, which were however beginning to clear, especially above, with marked vascularization, and here and there epithelial defects or proliferation of swollen epithelium.

A few weeks later the cornea had become so much clearer that the anterior chamber was visible, the dilated pupil gave a red reflex, and even the fundus, with the outlines of the optic nerve, could be made out, although vaguely. Vision was counting fingers at fifty centimeters. The site of the tumor was completely smooth, and only at the lower outer corneal margin could be seen a reddish nodule of the size of a millet grain, and a still smaller nodule, both not unlike an eruption of phlyctenules.

These nodules, surrounded by bloodvessels, were limited, but could not be displaced upon the sclera. They were local metastases, such as were described by Graefe in a case, and often noted by reliable ophthalmologists, but falsely characterized as phlyctenules, and first recognized by Virchow as cancerous structures on the basis of pathological study.

At reexamination on November 9, 1928, both nodules had disappeared, and the upper half of the cornea had become so clear that vision of 3/50 was recorded. The surface of the lower half of the cornea was still slightly irregular, and with the slit-lamp large bloodvessels could be seen in this area. The anterior chamber was deep, the pupillary margin of the iris slightly thickened.

In the treatment of epibulbar carcinomata three methods have to be considered: (1) removal of the eye with the tumor; (2) excision of the growth; (3) radiation treatment. Plocher, who has had most to do with the radiotherapy of these tumors, and who assembled the literature relating to such treatment, confesses that adequate experience as to the various forms of radiotherapy is not yet available, but that there are certainly cases of definitely favorable course.

The treatment can be carried out with either roentgen, radium, or mesothorium rays. Plocher believes that early epibulbar tumors should be removed with the knife and their bases cauterized with the galvanocautery. If no doubt exists that the tumor has been completely removed, the eye should not be disturbed, and radiotherapy is only to be started in case signs of possible recurrence are noticeable.

As to my case it may be said that —at least clinically—it appears to

have been cured, but the question whether recurrence or metastasis will later show itself cannot be answered. I showed the case at the meeting of the Society of Hungarian Ophthalmologists on November 9, 1928, in this apparently cured condition.

V. Ker, Nador-Utca 11.

RETINAL DETACHMENT COMPLICATING INSULIN THERAPY

(A bio-physico-chemical explanation.)

DAVID ALPERIN, M.D., F.A.C.S.
BROOKLYN

In three cases, one of which is described in detail, retinal detachment was thought to be due to administration of insulin for diabetes. The author's theory is that the retinal detachment is related to disturbances (in which the insulin and the diet play reciprocal parts) of the electrolytic and osmotic processes in the blood and the intraocular fluids. Thus, in hypoglycemia, a greater amount of exudate, diffusate, or transudate would be thrown into the subretinal space from the choroidal plexus of vessels.

This article was originally prompted by the accidental questioning by a matriculant of the eye seminar at the New York Postgraduate medical school as to whether the diabetes from which the patient was suffering had anything to do with the detachment of the retina which the patient presented on ophthalmoscopic examination. The subject was a young woman of about twenty-six years who had come to the clinic complaining of more or less sudden blindness, and who added that she was diabetic. Her brother, who accompanied her, had written to the drug manufacturer inquiring whether the insulin had any effect upon the eyes, as the occurrence of the eye trouble seemed to him almost simultaneous with insulin injections. I do not remember what he said the answer was; and the patient did not return to the clinic. I have seen since two more cases of retinal detachment which I believe were due to the insulin, but, will mention one in particular, which I had the privilege of treating in conjunction with Dr. O. H. Mosenthal.

Case: Mrs. E. A., thirty-two years old, was treated for diabetes mellitus for about one year and a half, and suddenly became blind in the right eye. Nothing unusual could be elicited as to history except a vague dull pain somewhere in the region of the parietal bone of the right side of the head. Pupillary reactions were normal, media clear, retina hazy especially around the macula, where slight pigment disturbances could be made out. She had no light perception. After I had explained to Dr. Mosenthal the "hypothesis" which I shall give later, he wrote me as follows, on September 27, 1928:

"Mrs. E. A.'s blood sugar, taken about 9:00 a.m., about 2 hours after one dose of insulin, was 250 mg. per 100 c.c. I am very much interested to hear what you say concerning the action of insulin in producing detachment of the retina. I have never encountered it in my experience.

"The present situation for Mrs. A., as far as the diabetes goes, is definitely fraught with some danger, as she has sugar in the urine and a high blood sugar. Personally, I believe that she should be under your care in a hospital and have someone take care of the diabetic condition in conjunction with you, so that full cooperation is obtained as far as the treatment of her eye and diabetes is concerned."

On October 4, 1928, Dr. Mosenthal wrote that the previous day, after breakfast, Mrs. A's blood sugar had been 125 mg. per c.c. without insulin. This was accomplished purely by restriction of diet. The urine was sugar-

free although no insulin was being used.

The patient recovered her vision, except for an absolute central scotoma which is gradually becoming smaller.

As with other new remedies, insulin is not free from some unpleasant complications. Like serums and toxins, insulin is an extremely potent remedy, and, because it is oftentimes self-administered, the patient should be under constant supervision of an internist as well as of an ophthalmologist. Dosage, indication, and proper control and understanding of the patient are absolutely essential for intelligent treatment. Bio-physico-chemical as well as psychic factors are, and should be, taken into consideration.

I have not been able to find in the literature any reports of cases of retinal detachment in diabetics treated with insulin. However, Richter[1] mentions some experiments with insulin in which the intraocular tension was raised to such an extent that violent glaucoma resulted.

Let us assume that patients under insulin are, and I believe this to be the case, oftentimes in a state of hypoglycemia. This hypoglycemia may be due to irregularities during self-administration, amount of ingested food, work performed, possible desultory pancreatic activity, and so on. The patient either eats the prescribed food as calculated, as to quantity and nature, and the blood-sugar is kept within the physiologic limits more or less; or the patient not having the appetite, or for some other reason, eats less; or, having ingested the prescribed amount of food, the patient has had an excessively busy day. The amount of insulin being the same, we can readily see that under such circumstances the drug will act upon the blood sugar, and hypoglycemia will result.

The blood, as we all know, contains two kinds of substance electrochemically speaking: electrolytes which dissociate and ionize, such as the mineral salts, and nonelectrolytes which do not ionize, such as proteins, extractives, urea, and sugar. The osmotic pressure is in direct proportion to the degree of ionization of the dissolved substances, and this is in direct proportion to the dilution of the electrolyte. Consequently, the thinner the solution, in this case the blood, the more molecules of the electrolyte will dissociate into its ions, and the greater the osmotic pressure in the hypoglycemic blood.

Henderson and Starling state that "the production of intraocular fluid is strictly proportional to the difference in pressure between the blood in the capillaries of the eyeball and the intraocular fluid". We know that the pressure in the eye, while influenced to some extent by the pressure in the blood stream, can vary quite independently of it. We find for instance a glaucomatous eye in a patient with a low systemic blood pressure, and vice versa a soft eye in a person suffering with hypertension.

The physiology of the capillary vasomotor mechanism is still in its infancy, but the assumption that there is a sympathetic branch of the carotid plexus controlling the choroidal vascular system explains, to my mind, the possibility of coexisting difference in pressure. The intraocular pressure is lower than the capillary pressure, thus allowing the fluid exchanges necessary for metabolism and nutrition. When, however, the normal equilibrium is disturbed, as it must be in the case of hypoglycemia, then a greater amount of exudate, diffusate, or transudate is thrown into the subretinal space from the choroidal plexus of vessels, and a flat detachment may result.

Duke-Elder[2], in his investigations on the reaction of the intraocular pressure to osmotic variations in the blood, mentions that the intraocular pressure is maintained and varied by three factors: (a) the physiologic partial impermeability of the lining cells of the eye; (b) the hydrostatic blood pressure in the capillaries of the ocular circulation; (c) the osmotic pres-

sure between the blood and the ocular contents.

The experiments of Richter and his findings as mentioned above are in consonance with our idea that in insulin therapy there is a disturbed hydrostatic condition in the eye and its surrounding vascular structures. Whether the fluid is poured into the eye through the congested ciliary vessels, increasing the intraocular pressure and presenting the symptoms of acute glaucoma, or whether the fluid is rushed into the subretinal space from the choroidal plexus, resulting in detached retina, the fundamental bio-physico-chemical changes are, to my mind, the same.

In conclusion I would say that it is highly important that the ophthalmologist delve more deeply into the relations of systemic dysfunctions to the eye, and that cooperation between internist and ophthalmologist be more frequently resorted to. Patients under insulin treatment should have occasional eye-ground examination, and, if visual disturbances occur, insulin should be discontinued temporarily. The amaurosis may be due to cerebral vascular disturbances in addition to the disturbances of pressure in the choroidal vessels. It would be interesting to know whether other ophthalmic physicians had like experiences.

750 Greene avenue.

References

[1] Richter, A. Klin. M. f. Augenh., 1926, v. 76, June, p. 835.
[2] Duke-Elder. Brit. Jour. Ophth., 1926, v. 10, Jan., p. 1.

NOTES, CASES, INSTRUMENTS

QUININE AMBLYOPIA COMPLICATING INFLUENZA PNEUMONIA

HENRY L. HILGARTNER, JR., M.D.
AUSTIN, TEXAS

In his textbook "Diseases of the eye", tenth edition, page 580, de Schweinitz summarizes as follows our knowledge with regard to the toxic effect of ethylhydrocuprein upon the eye:

"The blindness following the administration of toxic doses of ethylhydrocuprein (optochin), especially in the treatment of pneumonia, resembles in all respects that of quinine amblyopia.

"The first effect of the toxic influence of quinine is to lessen the blood supply of the retina and optic nerve, and later, as the author has experimentally shown in dogs, permanent optic nerve atrophy ensues. Ward Holden has demonstrated, and his results have been fully confirmed by Drualt, Birch-Hirschfeld, and a number of other observers, that the blindness is due to a degeneration of the ganglion cells and the nerve fibers of the retina, followed by an ascending degeneration of the optic nerve. Anatomic examination of eyes blinded by optochin reveals degeneration of the ganglion cells, vascular change, and partial atrophy of the disc."

As bearing upon the facts above referred to, I wish to report the following case:

On Thursday, January 17, M. J. T., aged seventeen years, female university student, developed influenza, and she was admitted to the hospital at 7:30 that evening with a temperature of 102 degrees. The next day at three p.m., the temperature had dropped to normal, but during the next twenty-four hours it rose to 104.9. On Saturday night, January 19, a diagnosis of bronchopneumonia was made, most of the left lower lobe being involved. On Sunday morning, January 20, the leucocyte count was 6,000, and the temperature 102.6. At 11:30 a.m. the patient received two c. c. of one per

cent quinine urea hydrochloride hypodermatically to stimulate a leucocytosis, and at twelve noon four grains of numoquin base was given with four ounces of milk. Between 11:30 a.m. January 20 and 5 a.m. January 22, the patient received ten doses two c. c. each of quinine urea hydrochloride, and, between twelve noon January 20 and 12:45 p.m. January 22, eleven doses of numoquin base, four grains each, were given.

On Monday afternoon, January 21, the patient complained of ringing in the ears and of deafness. On Tuesday morning, January 22, she complained of inability to see. The eye findings at this time were:

1. R. E. V. fingers at one foot; L. E. V. light perception.
2. Pupils dilated and fixed.
3. Corneal anesthesia, bilateral.
4. On ophthalmoscopic examination in the right eye, the vessels were found to be contracted and the disc was quite hyperemic; in the left eye, the disc was quite pale and hazy and the vessels were also contracted, but the left eye condition was much more severe than that of the right eye.

The quinine urea hydrochloride and numoquin base were discontinued on January 22, and the following day, Wednesday, January 23, the patient's vision was improved. The pupils had contracted, and the corneas had regained some sensitivity. The patient died of pneumonia on January 24.

This patient received ten doses of quinine urea hydrochloride and eleven doses of numoquin base, and developed a typical quinine amblyopia.

I wish to thank Drs. Joe Gilbert and Caroline Crowell for their permission to report this case.

Scarbrough building.

APPARENT ACCOMMODATION IN THE APHAKIC EYE

J. J. Horton, M.D.
EAGLE PASS, TEXAS

Fuchs (who is quoted merely as a familiar example of accepted teaching) says that the mechanism of accommodation "depends upon the elasticity of the lens". If this is true, then no lens, no accommodation. He also says: "The aphakic eye, moreover, is destitute of accommodation. The eye is incapable of altering its refractive state". This last statement, of course, is not universally true, as there are on record cases of aphakic eyes that could alter the refractive state. The theory has been advanced that in cases of apparent accommodation after lens extraction or absorption herniated vitreous or capsular or other débris is acted upon by the ciliary muscle, when the desire to accommodate stimulates this muscle to contraction, in such a way that the refraction of the eye is changed to adjust itself to near vision. It is hoped that the slit-lamp and corneal microscope will solve this question. It is probable that different factors act in different cases.

In this Journal, November, 1925, under the title "Binocular vision after unilateral traumatic aphakia", I reported a case of apparent accommodation in an aphakic eye and binocular vision in the same patient, the other eye being normal. The present communication is to report a somewhat similar case.

B. B., Mexican, aged sixty years. Complains of failing vision in O.S. one year. V.O.D. 6/12. V.O.S. fingers at four feet; light perception and projection good. O.S. almost mature cataract. December 4, cataract extraction. December 8, when I dressed the eye there was blood in the anterior chamber and edema of the upper lid. The blood was absorbed after a few days, but the edema remained for about one month. There was never any pain. January 19, discission. January 21, V.O.S. with plus 8.00 D. sph. (no astigmatism) equals 6/12. February 4, V.O.S. with plus 7.00 D. sph. equals 6/10. With this he can read newspaper print and the 1 m. type on the near chart, and with plus 8.00 D. sph. he can read all of the near chart (0.5 m. type).

Usually plus 4.00 D. sph. must be added to the distance correction of an aphakic eye to bring the near vision up to normal. Here is an eye which, with its distance correction on, upon an attempt at accommodation, undergoes some kind of change enabling it to focus and differentiate newspaper print at fifteen inches. The fact that the distance vision cannot be made normal may be a factor in this phenomenon.

V.O.D. with plus 0.50 D. cyl. axis 15° equals 6/6, with plus 3.00 D. sph. added for near. I was afraid he could not use a bifocal lens on the left eye. He is wearing O.D. plus 0.50 cyl. axis 15° with plus 3.00 D. sph. added, and O.S. plus 7.00 D. sph. With these glasses he is carrying on his occupation as tailor, most of his work being cutting. He wears his glasses constantly. Probably more patients with only one aphakic eye would be enjoying corrections for both eyes if the oculists would give them the chance.

LATE METASTASIS FROM CHOROIDAL SARCOMA

C. Norman Howard, M.D.
WARSAW, INDIANA

At the 1926 meeting of the American Academy of Ophthalmology and Otolarynology, I reported two cases of melanotic sarcoma of the choroid, with a bibliography of four hundred articles written on this interesting subject.

Through the courtesy of the Army Medical Museum, I obtained not only exact diagnoses of these cases but also careful microphotographs.

Case 1 was of the mixed cell type which is more apt to be followed by metastasis. As stated in the above report, the patient (case 1) died from metastasis "less than two and a half years from the time he first noticed a slight disturbance in his left eye, and a little less than ten months after the enucleation". The metastasis involved the spinal cord.

Case 2 was a spindle-cell melanotic sarcoma of the choroid, and the postoperative condition was reported as "metastasis delayed or escaped . . . . having apparently no local recurrence in the orbit or general symptoms". This was over three and a half years after enucleation, and four years after the patient had first noticed trouble with the eye.

I am now reporting further as to case 2.

The patient remained quite well until the spring of 1928, when she began to have slight symptoms of brain pressure. These symptoms became progressively worse until she died September 28, 1928. While no autopsy was performed, there is no doubt in my mind, from the account I received from the attending physicians, that their diagnosis of brain tumor was correct and it is but reasonable to suppose that this was a metastasis from the sarcoma of the choroid. There was no local recurrence. Death occurred, therefore, six years after the patient first noticed any trouble with the eye, and five and a half years after the eye was enucleated.

Hippel is of the opinion that most reported cases of melanotic sarcoma of the choroid are under observation too short a time to prove that metastasis has not occurred. In one of his cases, it appeared eighteen years after enucleation.

For the sake of greater scientific accuracy, let us, if possible, keep these unfortunate patients under observation indefinitely. Also let us explain to the relatives that, while early removal gives the only chance for recovery, yet the future can not be assured.

210 South Indiana street

TWO UNUSUAL CASES OF CONVERGENT STRABISMUS

A. Edward Davis, M.D., F.A.C.S.
NEW YORK CITY

These two cases of convergent squint are reported because of two unusual features in each case.

First, the convergence in each case, though of large amount, was corrected by orthoptic treatment alone; in fact overcorrected, a divergence developing.

Second, the refraction underwent pronounced changes in each case, showing the necessity of keeping such patients under observation for a long period.

Case 1: M. B., aged four years. Previous to coming under my observation she had been under the care of Dr. W. R. Parker, of Detroit, by whom she was seen first on March 20, 1907, giving a history of convergent strabismus of six or seven months duration; convergence was fifteen to twenty degrees, with low vision in the left eye.

Under a cycloplegic the patient accepted R.E. +4 D. sph. +2 D. cyl. ax. 90°; L.E. +7 D. sph. +2 D. cyl. ax. 105°. With this correction vision was practically normal in the right eye. In the left eye vision was undeterminable. These glasses less 0.50 D. sph. were prescribed, and the muscle error disappeared.

December 12, 1907, the patient returned with a history of divergence for the past two weeks. She fixed with the right eye, and divergence was fifteen to twenty degrees. The spherical correction was reduced 1.50 D. for each eye. This corrected the muscle error entirely.

In June, 1908, under cycloplegic the patient accepted practically the same glasses as she was wearing, and they were continued. The eyes were slightly convergent at this time. The vision of the left eye was 20/200.

I saw this patient first on October 27, 1908. At that time she was wearing O.D. +2 D. sph. +2 D. cyl. ax. 90°; L.E. +5 D. sph. +2 D. cyl. ax. 105°. Convergence ten degrees, true fixation, doubtful fusion of images with stereoscope. Under atropin R.V. 20/40; 20/20 with +3 D. sph. +2 D. cyl. ax. 90°. L.V. 10/200; 20/100 with +5.50 D. sph. +1.75 D. cyl. ax. 90°. Ordered full correction. With these glasses the eyes became parallel in ten days time.

February 25, 1909, the father reported that the child's eyes diverged. The spherical correction was reduced 1 D. for each eye.

March 8, 1910, eyes parallel but with tendency for left to diverge. By amblyoscope had fusion of second grade.

Patient was ordered to continue wearing same glasses and to use amblyoscope. Patient was not seen again until January 21, 1919. She had not worn any glasses for three years. Examination showed R.V. 15/10 with +1.50 D. sph.; L.V. 15/70— with +3.50 D. sph. +1.75 D. cyl. ax. 100°. The astigmatism had almost completely disappeared in the right eye. Eyes parallel, with difficult single binocular vision. Adduction four degrees, abduction eight degrees, sursumduction right and left five degrees. With red glass over left eye there was crossed horizontal diplopia. Ordered R.E. +1.50 D. sph.; L.E. +1.50 D. sph. +1.75 D. cyl. ax. 100°.

November 16, 1921, periodic divergence, glasses reduced to R.E. +0.50 D. sph.; L.E. +0.50 D. sph. +1.75 cyl. ax. 100°.

December 28, 1923, but little change in eye, periodic divergence, patient wears glasses only occasionally.

November 2, 1928, patient complains that the eyelids burn, and that her head aches after using eyes for close work. Javal, R.E., direct astigmatism 1 D.; L.E. direct astigmatism 2.50 D. R.V. 20/15; 20/10 with +0.50 cyl. ax. 90°; L.V. 20/200; 20/100 with +2.50 D. sph. +1.75 cyl. ax. 90°. Reads Jaeger no. 1 at from six to twenty inches.

With red glass patient has a crossed horizontal diplopia requiring eight degree prism base in to correct. Eyes parallel without red glass most of the time, though when the patient is very tired the left eye diverges.

November 5, 1928, under cycloplegic patient accepted R.E. +0.50 cyl. ax. 90°; L.E. +2.50 sph. +1.75

cyl. ax. 90°. These glasses were ordered.

Case 2: B. K., aged six years, February 25, 1920. The mother had noticed for one week that the patient's left eye turned toward the nose. No history of squint in the family. Convergence now fifteen to forty degrees, varying greatly in excursions toward the nose. True fixation.

Test under atropin, R.V. 8/200; 15/40 with +7 D. sph. +1 D. cyl. ax. 80°; L.V. 6/200; 15/200— with + 6 D. sph. +2 D. cyl. ax. 90°. These glasses were ordered.

June 5, 1922, eyes parallel; single binocular vision. The astigmatism has greatly increased in amount. Under atropin, R.V. 15/100; 15/20— with +5.50 D. sph. +2.50 cyl. ax. 80°; L.E. 15/200; 15/40 with +5 D. sph. +3.50 D. cyl. ax. 100°. These glasses were ordered for constant wear.

September 15, 1928. Eyes parallel both with and without glasses, single binocular vision, with difficulty. There is a tendency to divergence. With the stereoscope the patient sees the heteronymous views in crossed diplopia. The astigmatism continues to increase in amount. Under atropin, R.V. 15/200; 15/15 with +5 D. sph. +3 D. cyl. ax. 80°; L.V. 10/200; 15/40— with +5 D. sph. +4.50 D. cyl. ax. 90°. Prism adduction four degrees, abduction twelve degrees, sursumduction R. two degrees L. four degrees. Ordered R.E. +4.50 D. sph. +3 D. cyl. ax. 80° with 1 degree prism base up; L.E. +4.50 D. sph. +4.50 D. cyl. ax. 95°.

40 East Sixty-first street.

SOCIETY PROCEEDINGS

Edited by Dr. Lawrence T. Post

MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA

Section on Ophthalmology and Otolaryngology

January 18, 1929

Dr. Walter A. Wells, chairman

Choroidal tuberculosis

Dr. LeRoy W. Hyde reviewed the recent literature on ocular tuberculosis and reported two cases of tuberculous choroiditis. He said that the etiology of many chorioretinal lesions, for many years obscure, was now ascribed to tuberculosis; and that ocular tuberculosis was seldom associated with pulmonary tuberculosis. Analysis of the American literature on diseases of the uveal tract showed tuberculosis as the cause in ten per cent or less, while in the German literature it was fifty per cent or more. The diagnosis of tuberculous lesions of the eye could be reached only after a complete diagnostic study in which other possible factors had been eliminated, and after a high degree of tuberculin hypersensitivity had been demonstrated.

Case 1. T.B.W., aged twenty-five years, a laboratory technician, was first seen December 6, 1927. He complained that for the past three days objects had appeared distorted to the left eye. No other ocular symptoms were noted. Personal and family histories were unimportant. A very careful survey revealed three devitalized teeth, one of which was believed diseased and was extracted on December 10, 1927. X-ray of chest showed moderate increase in fibrosis at the roots of the lungs, but no evidence of active pathology. There was mild secondary anemia.

Intradermal injection of O.T. gave a very strongly positive reaction. O.D. V. was 20/20; O.S. V. 20/20. Each eye was normal in appearance. Anterior segments showed no pathology. With the left eye objects appeared distorted, particularly in the vertical position. The fundus of the right eye was negative. In the left macular region there was a small discrete area of exudate underlying the retinal vessels, below and to the temporal side of the macula lutea. Immediately

above this was a dark area and above this a small hemorrhage. Still higher were two smaller areas of exudate.

On January 5, 1928, O.D. V. was 20/15; O.S. V. 20/15. The fundus picture was unchanged except for a new hemorrhage to the temporal side of the original area. On February 20, 1928, O.D. V. was 20/15; O.S. V. 20/70. Fundus O.S. showed fresh hemorrhages above original area, nearer macula lutea. On March 24, 1928, O.D. V. was 20/15; O.S. V. 20/30—. There was a small hemor rhage to the nasal side of the upper lesion. All lesions were smaller than when first seen. On September 5, 1928, O.D. V. was 20/15; O.S. V. 20/70. The macula showed an elongated scar, pigmented and with a hemorrhage at its upper extremity.

The treatment of this case was light outdoor work, minimum use of eyes, a weak solution of dionin, and small doses of tuberculin "B.E.", once a week, beginning with 0.000,001 mg.

Case 2. Miss N.P., aged thirty-one years, first seen September 31, 1927. Her complaint was blurring with the left eye for a few days, with some distortion of objects. Family and personal histories were unimportant. Physical examination was essentially negative. O.D. V. was 20/20; O.S. V. 20/20. Right fundus was normal. Left fundus showed three small hemorrhages in the macular region, with some edema in this area.

October 25, 1927, O.D. V. was 20/15; O.S. V. 20/70 (with correction). Fundus O.S. showed extensive hemorrhage in the macula with no exudate present. January 30, 1928, O.S. V. was 20/70. There was a grayish scar to the temporal side of the macula and a small hemorrhage near the macula. November 15, 1928, O.D. V. was 20/20; O.S. V. 10/200; with correction 20/200. Fundus O.S. showed a scar involving the macula with several small hemorrhages around it. Tuberculin therapy was not resorted to in this case. There was such a striking similarity between the lesions in the two cases that the latter also was probably tuberculous. The patient refused to undergo further study and a positive tuberculin test was not obtained.

Hemorrhage in vitreous six days after cataract extraction

DR. S. B. MUNCASTER reported the case of Mrs. B., upon whom he had performed a cataract extraction on August 14, 1928. Recovery was uneventful until the sixth day, when she developed some bladder irritation and had to void at frequent intervals during the night. Upon examining the eye the following day he found her to have extensive hemorrhage into the vitreous and anterior chamber. With the use of atropin, dionin, and hot compresses the blood was absorbed gradually. She still had many string-like floaters in the vitreous, but her vision was 20/40 and he believed it would still improve.

Cataract extraction nine years after Elliot trephining

DR. S. B. MUNCASTER reported the case of Mrs. A., upon whom he had performed a trephining operation for glaucoma in each eye and who nine years later returned with a mature cataract in the right eye. He performed cataract extraction by dissecting a conjunctival flap down to the limbus on either side and to the filtering bleb above. With this flap held out of the way, a sclerocorneal section was made coming out through the bleb. After removal of the lens the conjunctival flap was sutured in place, and she got along very satisfactorily. The vision was improved to 20/100 with glasses.

Chronic simple glaucoma

DR. S. B. MUNCASTER reported the case of a patient on whom he had performed a bilateral trephine operation. He made a crescent-shaped incision in the conjunctiva with the ends up. The tension from the lids held such a flap in place, and a suture was not usually necessary. Intraocular tension one month later was normal.

Discussion. DR. W. T. DAVIS and DR. G. VICTOR SIMPSON had used plain catgut in suturing the conjunctival flaps, without irritation.

J. N. GREEAR, JR.
Secretary.

NEW ENGLAND OPHTHALMOLOGICAL SOCIETY

January 15, 1929

DR. W. HOLBROOK LOWELL presiding

Intermittent exophthalmos

DR. HUGO B. C. RIEMER presented a case, seen for the first time on December 23, 1928, in a girl of twelve years, referred to the clinic by her family doctor, who noticed that on stooping forward the left eye protruded. She had had scarlet fever, whooping cough, chicken pox, and "trench mouth." Otherwise she had been perfectly healthy and well. There was no history of injury.

Protrusion of the eye was first noticed by her mother last summer on coming out of the water after bathing. Vision in both eyes was 20/15; eye grounds normal. When the exophthalmos was present there was no apparent difference in the size of the retinal veins. The left lid was slightly more drooped than the right. After stooping over for ten or fifteen seconds a definite exophthalmos of the left eye was seen. This exophthalmos could not be elicited by compression of the left facial vein or by compression of the left jugular vein, but on compressing both jugulars in the upright position an exophthalmos of three millimeters appeared, and likewise when the patient stooped. The x-ray and physical findings were negative.

In reviewing the literature Dr. Riemer found that there had been over fifty such cases reported, and that the exact cause was still doubtful. Krause had reported post-mortem examination of four cases in which there were definite varicose veins, greatly enlarged vessels of the orbit. Krause believed these were present at birth or developed shortly afterward. He pointed out that the orbital veins had narrow valves. Another interesting thing was that he believed the major part of the venous blood to be carried in these veins, and that the lumen became narrow as they entered the cavernous sinus. Dr. Riemer thought with Birch-Hirschfeld that the condition was due to an obstruction to the flow of the venous blood anteriorly.

Contact glass in keratoconus

DR. GEORGE S. DERBY presented a patient who had keratoconus. Her vision improved very much with the use of the contact glass. Today she had worn the glass for six hours. She said she saw very much better with it than she had seen for years. She read 20/30 in Dr. Derby's office today, and she read next to the smallest line of reading type. She could put the glass in herself and wear it without any special irritation. Of course it had to be filled with physiological salt solution before application.

Dr. Derby was trying to discover which of the four kinds of contact glass at his disposal was the best for the patient. Best vision was obtained with a minus twelve cylinder; a rather strong cylinder to wear. The only difficulty seemed to be in taking the glass out. She still had to use one-half per cent solution of holocain before inserting it.

Amblyopia without organic lesion

DR. DERBY reported a case which was unusual in his experience. A perfectly healthy man, forty-eight years of age, whom he had seen on two occasions in his office, had an amblyopic right eye, which was about eight diopters astigmatic. The left eye was apparently normal. The appearance and fundus examination of the amblyopic eye were entirely negative except for the effect of the astigmatism in producing an oval disc. The vision was so low in this eye that the patient saw only light. He could not count

fingers or see hand movements unless the object was between him and the light. Dr. Derby thought that if the eye were taken out and sectioned it would probably show a perfectly normal retina, and he likened it to the blind area of retina which was present in the temporal periphery of every eye.

Gold chloride stain for corneal opacities

DR. EDWIN B. DUNPHY showed a woman aged thirty-five years, whose right cornea was completely white from old interstitial keratitis. The eye was sightless and diverged about thirty degrees. An operation had been done for cosmetic purposes according to the Knapp technique. The epithelium was denuded centrally for an area about three millimeters in diameter, and four per cent gold chloride solution on a cotton swab was placed on the denuded area for two minutes. Then several drops of adrenalin chloride solution 1 to 1000 were put on this area. This caused the area to stain a dark brown. Recovery was uneventful, leaving a good looking artificial pupil.

Pemphigus of the conjunctiva

Dr. Edwin B. Dunphy presented for DR. PAUL A. CHANDLER a woman fifty-three years old, having a history of sore eyes over a period of seventeen years. She showed an extensive scarring of the lids, with adhesions between the palpebral and the bulbar conjunctiva, at first thought to be trachoma. The adhesions had been cut several times but always grew together. The vision was 20/30 in the left eye. There was nothing on the cornea. The lids were a mass of adhesions.

Discussion. DR. W. HOLBROOK LOWELL stated that pemphigus was a disease concerning which no one seemed to know much. A case was turned over to him about twenty-five years ago. The patient had adhesions and symblepharon and was irritated especially by the lashes turning in. Some of these lashes had to be removed quite often, sometimes about three times a week.

Phacoerisis by method of Barraquer

DR. WILLIAM MCLEAN gave a moving picture exhibit illustrating operations by this method.

S. JUDD BEACH,
Secretary.

CHICAGO OPHTHALMOLOGICAL SOCIETY

December 17, 1928

GEORGE FRANCIS SUKER, president

Two cases of intraocular foreign body (wood, metal)

DR. M. L. FOLK presented a man thirty-one years of age, whose history was that three weeks ago, while splitting wood, several splinters had struck the right eye. Upon examination there was found a rent in the sclera, three to four millimeters long and six millimeters temporal to the limbus, and through which vitreous was protruding. The vitreous was hazy and contained numerous floaters. The prolapsed vitreous was replaced and the eye sutured. X-ray taken on the third day disclosed a foreign body, probably wood. The eye was now quiet and it was decided to wait for further developments. Vision was 0.6. The foreign body could not be seen with the ophthalmoscope or the slit-lamp.

The second case was one of penetration of the eye by a piece of metal. The patient was not seen until three weeks after the accident, when examination disclosed some opacity in the cornea and in the lens. X-ray showed a foreign body. The giant magnet was tried unsuccessfully. Dr. Gradle, in consultation, advised leaving the eye alone at present. It was now free from injection and the vision was 0.5. The uveitis had entirely cleared up.

Discussion. DR. T. A. ALLEN recalled a case shown before the society last year which was interesting because of the fact that there was a good deal of wood in the orbit, not revealed by x-ray.

Brain tumor

DR. T. A. ALLEN presented Miss E. M. aged thirteen years, who had reentered the hospital complaining of headache, some difficulty in reading, and enuresis. In June, 1928, she was in Cook County hospital for one week. The diagnosis made was of bilateral choked disc, due to cerebellar tumor, probably of the midline. About one week later she entered Presbyterian hospital for observation; with glasses, vision in the right eye was 20/30, left eye 20/70. X-rays of head and all serological tests were negative; von Pirquet was negative; and neurological examinations by Dr. Peter Bassoe did not yield any definite findings. Examination of fields showed an incomplete hemianopsia, especially of the right upper quadrant. The swelling of the left disc was 1.5 D; there was only slight swelling of the right.

Under nonspecific therapy consisting of potassium iodid and mercurial rubs the condition seemed to improve somewhat. Recent x-rays showed a definite increase in the size of the sella. At present the fields were again contracted. R. E. vision with glasses equalled 20/40—; swelling of the disc was four diopters. L. E. vision with glasses equalled 20/200—; swelling of the disc was three diopters. Both discs were pale. The fields were not greatly changed. There were no other intraocular findings. On neurological examination Dr. Bassoe found right positive Babinski, tendency to positive Oppenheim on both sides, otherwise negative.

Discussion. DR. PERCIVAL BAILEY said that there were three diagnoses to be considered; tumor in the median lobe of the cerebellum, tumor of the optic chiasm, and suprasellar cystic tumor. It did not seem that this girl could have a tumor in the cerebellum or there would have been a great deal more cerebellar disturbance than she showed at present. Suprasellar tumors showed calcification in the x-ray in about seventy-five per cent of the cases, and none was present in this case. Erosion of the sella turcica was also absent. There had been no disturbance of metabolism, no polyuria. His diagnosis would be probably a tumor of the optic chiasm. Such tumors caused a curious condition of the optic disc which was difficult to distinguish, resembling an optic atrophy with a low degree of choked disc. Since this patient started early with optic neuritis, she probably had a tumor of the optic chiasm. If the tumor were in the hypophyseal duct, operation would give relief; in the chiasm, nothing would be accomplished.

Plastic repair after blastomycosis of eyelid

DR. A. J. ST. GERMAINE presented a colored man who had developed blastomycosis about fifteen months previously. When first seen the upper eyelid was involved. The process spread to the lower lid and there was complete destruction of both lids. After the disease was checked by scar tissue formation, extensive grafting had been done during the past six months. The upper lid was grafted by a pedicle from the side of the head, and a pedicle graft was made on the lower lid, neither of which was successful. Grafts from the abdomen and lower leg were also unsuccessful. Finally, one month ago, another pedicle graft was made from the cheek, which took, and at the present time the patient had very good looking eyelids and the vision of the eye was not impaired.

Symposium on optic neuritis

DR. WILLIAM H. WILDER presented the ophthalmological aspects of this condition, describing briefly the anatomy with especial reference to pathological conditions. He felt that both the mechanical and the inflammatory hypotheses were necessary to explain some cases.

DR. NORVAL H. PIERCE, discussing the rhinologic aspects, said that anatomic studies of the walls of the nose did not provide an explanation for the medium of direct transference of toxins or germs from the interior of the nose to the orbit by way of the lym-

phatics, and especially to the region of the optic nerve. Optic neuritis was most frequently found in chronic cases rather than acute cases. It was very rare, so far as his observation went and from the literature, to find an optic neuritis accompanying an acute intranasal inflammation, unless there were evidence of intraorbital inflammation. That inflammation might extend from the nose to penetrate into the orbit was quite evident to all. That occurred by direct extension through the bone by a softening process. The mucoperiosteum on the nasal side became infected and a softening process occurred until it arrived at a series of vessels which were found on the orbital side, and inflammation was transferred then to the orbital periosteum. Whether a hyperplastic inflammation might be disseminated through the bone without destroying it, and so cause an optic neuritis, was at present simply a matter of hypothesis.

We were only justified in destroying the architecture of the nose, in an exploratory procedure, when every other source of infection had been excluded, and perhaps not then. He had had cases referred to him with optic neuritis which he had operated on and there had been improvement in vision, not two or three days afterward, but the next morning after operation. He agreed with Dr. Wilder that in a large number of these cases such improvement must be due to the bloodletting rather than to the removal of the cause. He was of the opinion that optic neuritis was rarely if ever associated with nasal disease where careful and repeated examination failed to reveal pathology in the nose, although it was possible that we might have so-called occult ethmoid trouble, an ethmoid cell being entirely blocked off from the nose. Such a cell might escape the x-ray and yet be full of pus. These cases were rare, and might be diagnosed by careful examination. He thought x-ray in examination of the accessory sinuses was most useful in the anterior series—the maxillary antrum and the frontal. It was more often misleading if depended upon alone for evidence of disease in the posterior or medial ethmoidal and in the sphenoidal cavities.

Dr. Lewis J. Pollock, in discussing the neurological aspect of optic neuritis, analyzed one hundred cases of brain tumor, twenty-one of suspected brain tumor, ten of brain abscesses, and a few others. He was especially impressed with the necessity of better classification of papillitis and papilledema.

Discussion. Dr. E. V. L. Brown said that one of the interesting points brought out was the matter of blindness, especially from retrobulbar neuritis, in connection with possible sinus infection. As Dr. Pierce said, the cases were infrequent and came from chronic conditions. He had seen one such case with Dr. Joseph Beck many years ago. After a siege of grippe and colds, the vision failed, and when the patient was seen it was R.E. 3/200, L.E. 8/200. The fields were contracted, the discs edematous, outlines blurred, veins very dark and tortuous. X-ray showed a shadow in the right ethmoid, and three days later Dr. Beck curetted the ethmoid and sphenoid sinuses, after a submucous resection. Vision promptly improved and within thirty-eight days after operation was 20/30 in each eye. After six years the blurred vision returned, the left ethmoid was operated upon by Dr. E. D. Putnam of Sioux Falls, South Dakota, and this procedure restored vision. Vision had remained good for nine years since.

Another case of retrobulbar neuritis in multiple sclerosis was at first mistaken for hysteria. The patient, a woman of twenty-six years, suffered a severe frontal headache one evening, and two days later blurred left vision and tenderness of the eye. On the fourth day vision was R.E. 20/20+4, L.E. 3/200. There was an absolute scotoma for form and color in the left upper nasal quadrant and in one-half of the adjoining lower quadrant, and a ten-degree central scotoma as well.

The disc was normal except for slightly overfilled vessels; knee reflexes exaggerated; no Babinski, Oppenheim, tremor or scanning speech, although she had noted a paresthetic "rheumatic" tiring of the forearms after a horseback ride the week before. She had had two severe colds six and two months previously. Sinus examination by Dr. Norval Pierce, as well as a neurological examination by Dr. Peter Bassoe, was essentially negative, and the condition was held by Drs. Frank Billings and Wilbur Post, as well as by Dr. Bassoe, to be best explained as a hysterical manifestation, because ten days later vision had been completely restored under electrical treatment. A similar attack occurred in the right eye several months later, and five years after onset the patient died with typical manifestations of multiple sclerosis.

Dr. George W. Hall discussed the inability in some instances to differentiate between syphilis of the brain and tumor of the brain. It frequently happened that both were present. A patient who for a number of years had been under treatment for syphilis was brought in with paresis of the left side of the body, and it was not clear whether papilledema or papillitis was present. Autopsy showed glioma with hemorrhage. There was no active syphilis of the brain at that time.

He had a case which had been diagnosed as optic neuritis, and in which the clinical findings showed the case to be one of multiple sclerosis. It was his opinion that multiple sclerosis was back of many of the cases of retrobulbar neuritis. The neurologist did not get these cases until cardinal symptoms had developed, and it therefore behooved the ophthalmologist to recognize the possibility of multiple sclerosis early, because a period of ten years might intervene between the early ophthalmological findings and the cardinal symptoms of multiple sclerosis. Central scotoma, loss of abdominal reflexes, and positive Babinski on one or both sides was the triad upon which the diagnosis should be made early, and then the progress of the disease might perhaps be checked by treatment. Three years ago Dr. Hall had had a patient who had rapidly developed choked disc, and it was thought inadvisable to make a spinal puncture. Dr. Harry Mock did a subtemporal decompression and milky fluid was found. The laboratory had to make the diagnosis of meningitis. He then made a lumbar puncture and found a pressure of 350 mm., although a large opening had been made in the skull.

Dr. G. Henry Mundt recalled that Dr. Leon White of Boston had made a study of the shape of the optic foramen. A slit-shaped optic foramen materially increased the liability to optic neuritis. Where there were bizarre symptoms, even with a negative blood Wassermann and a negative history, one was frequently justified in using mercury. Optic neuritis should be considered as one would a neuritis in other parts of the body, in which one did not look for a focus of infection in close proximity to the nerve. A close study of the blood count was often of value in satisfying one whether he was dealing with a case of optic neuritis related to a focus of infection—teeth, tonsils, or sinuses.

Dr. William E. Gamble said that about thirty years ago, he thought, Dr. Loring of New York had first pointed out that frequently in neurotic patients the disc was red, due to a vasomotor disturbance in the small vessels of the disc, this being in no sense a disturbance of the nerve tissue. One thing that might confuse consultants in these cases was the indiscriminate use of the terms optic neuritis, papillitis, choked disc and papilledema. In neuritis in the early stages, infiltration was present; never in choked disc. That was the differentiating feature. In the later stages of choked disc there might be confusion on account of proliferation of glia cells, but they were not lymphocytes.

Dr. Alfred Lewy stressed the aid to

be received from an otoneurological examination. When a patient was referred to the otorhinologist there were two points to be kept in mind—the possibility of a focus of infection, and, if found, whether that focus was the cause of the neuritis. The presence of nerve deafness or vertigo or disturbance of equilibrium should certainly delay any operation in the nose until the question of multiple sclerosis was settled by further investigation. In the European clinics multiple sclerosis was apparently diagnosed more frequently than here; in 30 to 66 per cent of all their cases of retrobulbar neuritis. Very often the lesions of multiple sclerosis were first found in the vestibular area.

DR. WILLIAM H. WILDER (closing) did not agree with Dr. Richard Gamble in the statement that in papilledema there was no evidence of inflammatory reaction. That the condition of hydrops of the intervaginal space produced an edema was well known. He could not agree that there did not in all probability develop in the course of papilledema a condition of papillitis. This term papilledema had been introduced as a convenience to explain conditions preceding those due to the effects of inflammation. Cases of neuritis were frequently seen in which a tumor of very small size caused the neuritis. It would be well if it were possible to differentiate between a mechanical process and an inflammatory process, but this could not be done with our present knowledge.

An oculogastric reflex experimentally demonstrated

DR. JAMES E. LEBENSOHN read a paper which will be published later in this Journal.

ROBERT VON DER HEYDT,
Secretary.

COLORADO OPHTHALMOLOGICAL SOCIETY

December 15, 1928

DR. C. A. RINGLE presiding

Occlusion of superior branch of central retinal artery

DR. JAMES M. SHIELDS presented Mr. S. B. O., whose fundus showed a white cord-like change in the upper branch of the central artery of the right eye as the artery passed over the upper margin of the disc. The branches of the artery above were not obliterated but were much attenuated. The field of this eye showed absence of the entire lower nasal quadrant and of the inner half of the lower temporal quadrant.

Retinal detachment

DR. JAMES M. SHIELDS also showed Mr. A. W. M., aged fifty-six years, who had a detachment of the retina in the lower quadrant. The only known possible cause was a severe blow on the top of the head six months before.

Bilateral chronic glaucoma with iridectomy

DR. WILLIAM H. CRISP presented a woman, aged thirty-eight years, who had bilateral chronic glaucoma. Iridectomy had been done in the left eye six, and in the right eye eight years previously. Recently, in spite of the use of one per cent pilocarpin solution three times a day and eserin sulphate 1 to 240 twice daily, the tension of either eye had frequently been around forty millimeters. The corrected vision of the right eye was 5/4 partly, that of the left eye 5/30 partly. Sometimes, under vigorous use of the eserin and pilocarpin, the tension had dropped to as low as right 24 to 26, left 22 to 23 mm. The left field was greatly contracted, and was within ten degrees of the fixation point above and below; while the right field was well preserved in an irregular outer quadrant, but in rather more than the nasal half was contracted to within five degrees of the fixation point. There seemed to be an appreciable tendency to exacerbation of the trouble at the menstrual period. Especially in view of the patient's moderate age, should a supplementary filtration operation be considered?

Discussion. DR. W. T. BRINTON stated that he had used the Shahan thermophore in this type of case in a few instances, with temporary benefit. Direct contact was made in the ciliary region for one minute with the temperature at 120° F.

DR. E. R. NEEPER advised the use of high frequency current. He had used it in many cases with decided comfort to the patient. A definite heat was obtained, just short of distress, and this was maintained and applied for never less than twenty minutes and sometimes as long as forty-five minutes. In severe cases this treatment was used several times in one day.

DR. JAMES M. SHIELDS reported two cases in which a rise in tension to 48 mm. Hg fell after removal of oral sepsis. The tension had remained at 24 mm. Hg for many months. The tension had been taken every two weeks.

Septic endophthalmitis

DR. WILLIAM C. FINNOFF brought J. H. E., male, aged fifty-six years, a mechanic. While pounding on a piece of "case hardened" steel, a particle had flown into his right eye, two and one-half millimeters from the limbus on the nasal side, passing through the globe. The foreign body was located 18 mm. posterior to the anterior surface of the cornea, 5 mm. to the temporal side, and 12.5 mm. below the horizontal meridian; it measured one and one-half millimeters in diameter.

When first seen on December 8, 1928, four days after the injury, there was moderate circumcorneal injection. The anterior chamber was filled with fibrin, and a 1.5 mm. hypopyon was present in the lower angle; the lens was clear and the vitreous turbid.

The patient was sent to the hospital December eight and given a vaccine containing twenty-five million typhoid and paratyphoid bacilli. The temperature rose to 101 degrees F. in thirty-two hours and gradually subsided. The second dose of fifty million was given sixty hours later, with a similar rise of temperature in eight hours; and one hundred million bacilli were given December thirteenth, with a rise to 99.6 degrees.

Twenty-four hours after the first injection the hypopyon had diminished one-half and the anterior chamber was quite clear. It then filled with fibrin, but this had gradually diminished with subsequent injections. The chemosis, circumcorneal injection, and general condition of the eye had improved marvellously since the administration of typhoid and paratyphoid bacilli.

Discussion. DR. DONALD H. O'ROURKE thought that typhoid and typhoid-paratyphoid vaccine intravenously was far superior to milk intramuscularly. The dosage was much more accurate and more easily varied. Also the administration was less painful. The vaccine was always available, whereas whole nonpasteurized milk, strange as it might seem, was very often hard to obtain.

Glaucoma simplex

DR. MELVILLE BLACK exhibited a man, fifty-two years of age, who had come under his observation six weeks ago with a well developed glaucoma simplex in both eyes. At that time the vision O.D. was 20/30 and O.S. 20/20. The fields showed a contraction to ten degrees. The tension O.D. was 49 and O.S. 43 mm. with the Gradle tonometer. Under two per cent pilocarpin the pupils came down to 1.5 mm. and after one week the tension was 20 mm. The tension, however, had again increased and was now 38 mm. The fields had remained unchanged.

Discussion. DR. F. R. SPENCER said that nothing definite could be promised in this particular case, but that operation should be advised, and the patient made to appreciate his share of the responsibility.

DR. JOHN A. MCCAW gave some additional notes on a case he had reported to the society one year ago. The woman, aged sixty-eight years, had lost one eye with glaucoma sim-

plex. The tension in the remaining eye had been controlled with pilocarpin for eight years. The field of vision had narrowed to within thirty degrees of the fixation point. On one occasion a year ago, the tension rose to 38 mm. At this time massage over the cornea through the closed lid for ten minutes twice each day reduced the tension to 24 mm. The patient was examined one month ago and the tension was recorded at 24 mm., showing what might be accomplished simply by massage. Dr. McCaw favored a trephining in Dr. Black's case.

Abducens paralysis simulating concomitant convergent squint

Dr. G. H. Stine (by invitation) showed H. B., male, aged fifty-five years. When first seen in November, 1928, he complained of double vision which he thought was due to a blow on the right temporal region six years ago. Examination showed deviation of the right eye inward about fifteen degrees and slightly downward. Rotation, on the perimeter, was about ten degrees less than the normal eye when turned outward, or up and outward. Convergence was full and equal. The squint was concomitant convergent in type.

Diplopia fields showed homonymous diplopia to the right, constant on looking in all directions except the extreme left, and not increased on looking to the right. The separation of the images was greatest midway in all directions and decreased on extreme rotation. Single vision was obtained when converging within one meter.

Both fundi showed a well advanced retinochoroiditis. Vision O.D., was 6/5, O.S., 6/6. The blood Wassermann was negative, but the spinal fluid was positive, and the colloidal gold curve indicated tabes. Neoarsphenamin used for the past month had improved the general condition, but no change in the eye condition had occurred.

It was suggested that the conversion of a squint due to paralysis of the abducens into concomitant convergent squint might be the result either of a coexisting high degree of esophoria, or of a contracture of the antagonistic internal rectus.

Traumatic dislocation of lens

Dr. John A. McCaw presented Mr. F. G., aged fifty years. On May 21, 1928, he was struck on the left eye by the nozzle of a high pressure air hose, producing a lacerated wound that perforated the upper eyelid and extended from below the eyebrow to within about five millimeters of the margin of the lid. The perforation went through the skin, the conjunctiva, the orbital fascia, and the tendon of the levator. The wound was closed with several sutures.

The eye was not examined until the lid was healed, when a tremulous iris and a dislocated lens were found. The lens was lying in the vitreous, below. The eye had been from the first perfectly quiet, so it was decided to leave it alone after trying, without success, to bring the lens forward to the anterior chamber. Vision O.D. was 20/16, O.S. 20/20, with plus spheres.

Discussion. Dr. William H. Crisp thought that the eye should be left strictly alone.

Dr. W. F. Matson cited a case in which a cataractous lens had become dislocated after an injury. The eye remained quiet for two years but finally developed acute glaucoma.

Albuminuric retinitis

Dr. William M. Bane showed T. M., colored, aged twenty years, housewife, whose fundi showed an unusually beautiful and typical appearance of this condition. The patient had had three babies. One had died at birth, one when a few weeks old, and the last one was living and well, just two weeks old. The blood Wassermann was negative. There were some eclamptic symptoms before the birth of the baby, and the urine contained some albumin. The first signs of poor vision were noticed by the patient in the right eye soon after the last baby was born. The vision of

this eye had failed until now it was only possible to see a hand at one foot as a moving object. The left eye began to fail, so far as she knew, about one week later than the right. Vision with it was now 5/20. The typical star-shaped exudate surrounding the macula was more pronounced in the right than in the left, but both fundi showed numerous hemorrhages and a marked neuroretinitis. The urine showed a faint trace of albumin and many pus cells. The blood chemistry showed nonprotein nitrogen 117.6 mg. in 100 c. c., urea nitrogen 10 mg. in 100 c. c., creatinin 1.33 mg. in 100 c. c., sugar 83.33 mg. in 100 c. c.

DONALD H. O'ROURKE,
Secretary.

NASHVILLE ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

December 17, 1928*

DR. HERSCHEL EZELL, chairman

Monocular neuroretinitis or papillitis, traumatic

DR. HERSCHEL EZELL presented the case of Mr. G. H. J., aged twenty-three years, white, married, a machinist who was first seen on December 12, 1928. The patient complained of blurred vision and a painful and inflamed right eye. He said that on December 9, while cutting wood, a stick had flown up and struck him. He was not much concerned about the accident at the time, but since then the eye had been painful and the vision markedly impaired. Both eyes had been normal previous to the accident.

Examination: The right pupil was slightly dilated but it reacted both directly and consensually to light. The vision was 20/70, not improved with glasses. The vision of the left eye was 20/20. Homatropin in the right eye produced normal mydriasis. Ophthalmoscopic examination of the right eye showed clear media and a striking fundus picture. There was complete obscuration of the borders of the disc, which was rendered markedly obscure by the very tortuous converging vessels. The dark tortuous veins protruded immediately over the disc and in the outer parts of the field were no less striking. There were no hemorrhages present at the time of the first examination. The field of vision was normal. The patient was instructed not to use his eyes and to wear glasses, and was put upon iodide of potash. Four days after first seeing him there was very little change in his condition.

A search through the American Encyclopedia of Ophthalmology and other available books had failed to bring to light a report of a single case of traumatic monocular neuroretinitis.

Discussion. DR. W. W. WILKERSON asked if it were not possible that there was some other condition back of this and that the accident just brought it to light.

DR. EZELL said that the retinitis was thought to have been due to the trauma because the man had had no trouble until the accident and his eye had not been red or painful.

W. W. WILKERSON, JR.,
Secretary

COLLEGE OF PHYSICIANS OF PHILADELPHIA

Section on Ophthalmology

December 20, 1928

DR. C. E. G. SHANNON, chairman

Multiple intraocular foreign bodies

DR. A. G. FEWELL showed F.G., aged eight years, who on November 23, 1928, was standing near a bonfire on a vacant lot when an explosion occurred, and something struck him in the right eye. He was brought to the clinic at the Episcopal hospital the following afternoon. The only evidence of external injury was a subconjunctival hemorrhage extending from the limbus of the cornea to the

* This supplemental report of the meeting of the Nashville Academy on December 17, 1928, has been received since publication of the report which appeared on page 305 of the April issue.

internal canthus. Near the center of this, about five millimeters from the cornea, was a small depression where evidently a foreign body had entered. The tension was normal. Vision was O.D. 6/30; O. S. 6/23 (there being a high compound hyperopic astigmatism). The ophthalmoscope revealed a few streaks of hemorrhage in the vitreous and two glistening foreign bodies of metallic appearance about one-half the size of a split pea. One foreign body was situated slightly down and in from the disc, about three millimeters in front of the retina, the other below and farther to the nasal side and just behind the lens. Between them were several foreign bodies, each about the size of a pin-head. Two x-rays were negative for opaque foreign bodies, and the electromagnet had no effect: the eye was observed with the ophthalmoscope while the magnet was being applied, and there was not the slightest movement of the foreign bodies. These foreign bodies were thought to be either glass or stone. At no time had the eye shown any sign of inflammation.

Star figure in the macula from injury and from uveitis

Dr. Warren S. Reese presented two cases of this condition.

Case 1. A colored boy of seventeen years was first seen on October 24, 1928. The previous day, while playing football, he was struck in the right eye by the hand of one of the players. This caused temporary loss of vision. When first seen the vision of the affected eye was 18/100. The lids were swollen and discolored, and the bulbar conjunctiva quite red, mainly from subconjunctival hemorrhage. The pupil was horizontally oval, and eccentric inward, and dilated very little to atropin. The disc was of good color but its edges were slightly blurred. There was a vertical area apparently of exudation just to the temporal side, and, beyond this several hemorrhages. Four days later the patient complained of diplopia and the eye was slightly divergent. The pupil was semidilated, and the swelling of the lids, etc. had almost entirely disappeared. The disc edges were more markedly blurred and there was an exudate on the lower outer disc margin, and below this a less clearly defined wing-shaped area which extended out into the fundus for about two disc diameters. The macular region showed a number of fine parallel lines. On November 1 the eye was much better but there was still diplopia; and the macular region presented a typical star-shaped figure such as is seen in albuminuric retinitis. The vision was still 18/100. Vision now was 18/50, and there had been marked resorption of the star-shaped figure so that at present it was not so typical as when first noticed.

Case 2 was admitted to Wills hospital several months ago with a definite uveitis. There were deposits on the posterior surface of the cornea, marked blurring of the disc margins, and congestion of the fundus. The macular region presented a star-shaped figure.

In both these cases the general physical examination was negative, special attention having been paid to the urinary examination. Case 2 at one time showed a positive Meinicke, but at no time a positive Wassermann, even under the provocative test. A third case of star-shaped figure was recently shown at Wills hospital from Dr. Chance's service. This patient had certain signs which suggested a possible previous uveitis. Case 1 had shown no signs of uveitis at any time, and trauma seemed to be the only causative agent. It seemed possible that the injury might have caused a uveal or retinochoroidal disturbance which was the direct cause of the macular figure. The uveal involvement in the other two cases suggested this.

Embolus of branch of retinal artery

Dr. J. Milton Griscom exhibited a case showing an embolus of the inferior division of the central retinal artery. The patient, who was suffer-

ing from a mitral regurgitation, suddenly lost the upper half of his visual field. Ophthalmoscopic examination showed a rounded, highly refractile dilatation of the inferior branch of the central artery of the retina just as it divided into the inferior nasal and temporal branches. The inferior nasal branch showed segmentation of the blood stream, and the temporal branch appeared about normal, although along its course there was a dense, whitish opacity of the retina. After two months the appearance of the fork of the artery at which the embolus lodged was unchanged but the two branches had become thread-like in size, with visible perivascular lymph sheaths. Central vision was 6/9, but the upper field of vision was lost.

Implantation of endogenous cartilage into orbit long after enucleation of eyeball

Dr. C. E. G. Shannon reported the case of Mary T., aged eight years, admitted to Jefferson hospital on September 17, 1728. She had had a Frost-Lang operation on the right side four months earlier, the gold ball escaping three weeks after the operation. Examination revealed a very deep, contracted socket and marked furrowing of the upper lid. It was first proposed to reimplant a gold ball in the socket, as advocated by Dr. L. Webster Fox. This operation had been attempted by the writer on a previous occasion without success, and therefore the remote implantation of endogenous cartilage seemed more likely to bring about the desired result. The particular phase the writer wished to emphasize in this report was the fact that in his case a remote implantation was under consideration. In his limited experience, and in the experience of others with whom he consulted, the gold ball almost invariably escaped, or at least did not prove satisfactory. Consequently, Bagley's recommendation of the endogenous graft was appealing.

On September 19, 1928, Dr. H. L. Righter removed the costal cartilage of the sixth rib, measuring about five or six cm. in length, carefully retaining the entire perichondrium surrounding the graft. Bagley had recommended in his paper that the perichondrium of the anterior surface should be removed with the graft, the perichondrium being left on the posterior surface for future regeneration. Dr. Righter did not believe any danger would be incurred by removing the entire perichondrium with the graft, as the fifth and seventh ribs seemed to form a sufficiently firm support for the chest wall.

A horizontal incision was then made in the conjunctiva of the socket and the conjunctiva thoroughly undermined above and below. A vertical incision followed in the deeper tissues. Fortunately, Tenon's capsule was found with little difficulty and the graft was then carefully inserted in the capsule in the vertical position. Dr. Cross suggested insertion in this manner, as he felt it would fill out the socket to much better advantage. Tenon's capsule and the conjunctiva were then sutured and a firm bandage applied. For a few days the patient complained of some distress in the chest and, naturally, there was marked reaction in the socket. However, the chest wound healed rapidly, and under cold compresses the swelling of the lids and of the tissues of the socket quieted completely in the course of ten days to two weeks.

Magitot's insertion of the head of the femur of a dog's hind leg might prove just as satisfactory, even though it should be a remote implantation as in the case presented in this paper. Dr. Shannon thought the success of the operation depended in a measure upon the finding of Tenon's capsule, always a conjectural matter in a remote implantation. Dr. Shoemaker was of opinion that the graft would be absorbed into the tissues and its value in filling out the socket thereby lost. Would not the retention of the perichondrium, as to both anterior and posterior surfaces, tend to eliminate this possibility as was done in this case?

Notwithstanding the apparently successful result in this case, it was distinctly a radical operation, and the speaker questioned its advisability except under unusual circumstances.

Discussion. Dr. G. E. de Schweinitz referred to Magitot's method, evolved during the World War, of utilizing satisfactorily formalinized cartilage taken from a calf or lamb rib as an implant after enucleation. The prepared cartilage was always ready, and could be shaped to any size that was required for the purpose of implantation. Dr. de Schweinitz stated that he had not himself employed this method, but the primary results he had witnessed were good. He referred also to the opinion held by some surgeons that cartilage transferred as an implant from the patient's rib was more satisfactory than that taken from an animal's rib, because the autogenous graft, it was said, established fresh communications with the bloodvessels in its vicinity, and became adherent to the capsule envelope.

High hyperphoria with violent headache, corrected by tucking

Dr. G. Oram Ring reported this case (to be published in full in the American Journal of Ophthalmology).

Discussion. Dr. C. E. G. Shannon considered the Harrison tucker efficient, not only in advancing the internal and external recti, but equally so in operations upon the superior and inferior recti, as was conclusively shown in Dr. Ring's case. The administration of ether might be regarded generally as somewhat of a handicap in determining the amount of tucking to be done, but no difficulty was experienced in this case, as the elevated eye was brought down to the plane of the fellow eye with surprising accuracy and ease. The tucking operation in hyperphorias of ten degrees or more seemed especially suitable by reason of its simplicity and effectiveness, and far preferable to a tenotomy.

Final report on case of supposed orbital sarcoma

Dr. Edward A. Shumway made a final report on the case presented for diagnosis at the November meeting of the section, in which there was proptosis of the right eye with diplopia, in a young girl, and enlarged glands in the neck. The laboratory tests were negative for lues; the blood showed an eosinophilia, and the stools were therefore examined for parasites, but none were found. Examination of a small gland dissected from the neck proved the presence of a round-cell-sarcoma metastasis, evidently from the growth in the orbit. The proptosis had increased, optic neuritis had appeared, and the eye had become blind. The girl was being given heavy doses of radium, but there was evidently a general sarcomatosis, and the prognosis was bad; she had lost weight and the general health was apparently becoming greatly affected. Dr. Shumway had hoped the condition would prove to be due to focal infection in the tonsils or sinuses, but the diagnosis of sarcoma was unfortunately determined by the biopsy. Dr. Shumway exhibited microscopic slides of the involved gland, which showed very rapid growth; the type of the sarcoma was endothelial, and the cells showed a great number of karyokinetic figures.

Chondrosarcoma of orbit; modified Krönlein operation

Dr. Frederick Krauss reported a case of chondrosarcoma of the orbit in which the tumor had been removed by a modified Krönlein operation. The tumor was subperiosteal, of the size of a walnut, and had completely dislocated the eyeball from the orbit. The gradual growth of the tumor had brought about a compensatory enlargement of the lids. Despite this, later the cornea became uncovered, owing to the extreme exophthalmos. The operation consisted in removing as much of the outer orbital edge and external wall of the orbit as was required to remove the tumor. This was done with a rongeur after the

periosteum had been carefully separated on both sides. The skin incision was made horizontally, the incision in the periosteum vertically. This operation was similar to that performed by Dr. Harold Gifford. As a result of the suturing of the temporal fascia to the periosteum, very little deformity was occasioned.

Interstitial keratitis after trauma; relation of trauma to syphilis

Dr. Jos. V. Klauder (by invitation) related the case of a married woman aged twenty-one years, who presented interstitial keratitis involving the right eye. Ten weeks previously her baby had hit the patient's right eye with a broom. The eye became inflamed, and the inflammation gradually passed into interstitial keratitis. Four weeks after the injury the patient was admitted to Wills hospital with a typical interstitial keratitis. The left eye remained uninvolved. She had the facies of congenital syphilis, Hutchinson's teeth, and a four plus Wassermann blood reaction.

In Spicer's study of interstitial keratitis, in three per cent of the cases there was noted a direct association with injury, that is, the injury was seen to pass into interstitial keratitis while the patient was under observation. In Butler's series, twenty per cent were preceded by injury. The possible effect of trauma in precipitating interstitial keratitis was of considerable importance in view of the workmen's compensation acts.

Interstitial keratitis following trauma to the cornea was not regarded as a coincidence, in view of the rôle of trauma in determining localization of syphilitic lesions as seen in clinical syphilology and in experimental rabbit syphilis. The surgeon was cognizant of syphilis as a factor in the nonhealing of wounds, the nonunion of fractures. The laryngologist was reluctant to perform a septum operation on a patient with syphilis. Trauma caused by the blood stream had been mentioned as a possible factor in the production of aneurysms. Trauma caused by the blood stream of a patient in the late stage of syphilis might result in any of the late syphilitic lesions. Indeed, it appeared from clinical observation that syphilitic lesions might develop in areas of the skin that had been traumatized shortly before the patient was infected with syphilis. The appearance of syphilides at the sites of tattoo marks might be cited.

Studies in rabbit syphilis furnished definite proof of the rôle of trauma in determining the localization of syphilitic lesions. Traumatizing the skin of rabbits, then inoculating the animal with syphilis via the testes, resulted in a chancre at the site of the trauma.

Discussion. Dr. G. E. de Schweinitz referred to the rather elaborate attention which Igersheimer paid, in the second edition of his book "Syphilis und Auge", 1928, to the relation of injury to interstitial keratitis. From the experimental standpoint, neither Igersheimer nor Clausen was able to demonstrate that injury played an important rôle with respect to the development of keratitis in luetic animals. Although there was no doubt that injuries of the cornea in persons with congenital lues had been and might be followed by interstitial keratitis, there was also no doubt, according to Igersheimer, that it had not been proved, in many of these cases, that the association was more than a coincidence.

Mohr's investigations were quoted, namely those which concerned themselves with a review of Uhthoff's private material, whereby it was demonstrated that only twice among 670 cases could trauma be accused as an etiological factor in the development of specific interstitial keratitis, and in Igersheimer nor Clausen was able to cases) there was not a single one which with certainty could be attributed to the influence of trauma. However, the observations of Spicer, Butler, and Cunningham on the etiological influence of trauma in interstitial keratitis were well known. It might

be, as Hans Barkan had said, that injury activated dormant spirochetes in the cornea.

DR. SHANNON referred to the fact that Dr. Hansell in his clinic at the Jefferson Medical hospital had on several occasions exhibited cases of interstitial keratitis in which to his mind trauma was the immediate cause. He thoroughly believed that at times a heredosyphilitic individual could develop interstitial keratitis as a result of injury to the eye. Dr. Klauder's report would seem to confirm this belief.

DR. H. MAXWELL LANGDON thought of three instances where workmen had developed interstitial keratitis and gave a history that a foreign body had struck the eye at the start of the condition. Careful inquiry among the people who first saw these cases and treated them had proved that no foreign body was present when they were first seen nor was there a mark of a foreign body.

The speaker thought that frequently the patient believed he had a foreign body on the eye because of the first symptoms at the onset of the interstitial keratitis; congestion, lacrimation, and the accompanying discomfort. It was possible that a foreign body might allow latent spirochetes to become active in the part, but the majority of the cases in which a history of superficial foreign body was obtained were probably unreliable.

LEIGHTON F. APPLEMAN,
Clerk.

OMAHA AND COUNCIL BLUFFS OPHTHALMOLOGICAL AND OTOLARYNGOLOGICAL SOCIETY

December 19, 1928; January 16, 1929

DR. DONALD OWEN, chairman

Diabetic retinitis

DR. CHARLES SWAB presented the case of a man of fifty-five years, whose fundus showed the typical diabetic picture of small round sharply defined dots in the retina, with small hemorrhages.

Idiopathic internal ophthalmoplegia

DR. G. B. POTTER presented a man of thirty years, who had noticed blurry vision of the left eye and dilatation of the pupil for some time. Vision for distance was 20/20, but complete paralysis of accommodation was present, and the pupil was widely dilated and showed no reaction to light or distance. The Wassermann was negative and remained negative after several salvarsan injections. A neurological examination including examination of the spinal fluid was negative. One per cent eserin was used with relief from glare, and after two months a very slight reaction to light was present.

Discussion. Several speakers mentioned seeing similar cases without any apparent cause or where a focal infection might be invoked as the cause.

Late traumatic detachment of the retina

DR. S. R. GIFFORD presented the case of a man of eighteen years who had received a sharp blow on the left eye by a heavy piece of wire one and a half years before. Vision had returned to normal following this injury, but for the past two months had been failing rapidly. Vision at the present examination was right eye 20/20, left eye 10/200. The lower half of the retina was involved in a rather flat detachment raised six diopters near the equator. The macula showed punctate pigment displacement. The field had lost the upper nasal quadrant and part of the upper temporal quadrant. No hole could be seen in the retina. It was supposed that this case represented an original injury to the retina which had healed, allowing a later detachment from some slight cause such as stooping or straining. The case has been seen for the first time the day when presented, and no treatment had been attempted.

Discussion. DR. DONALD OWEN doubted whether the origin in this case was traumatic and mentioned a case in which a flat sarcoma had presented a similar picture to this.

DR. H. LEMERE thought the prognosis from any treatment was very poor.

DR. SWAB believed the only reason for treating these cases of retinal detachment was to prevent further loss of field.

Optic neuritis with thrombosis of the central vein

DR. SANFORD GIFFORD presented the case of a man of twenty-three years, who had been first seen with normal vision in both eyes but with the nasal half of the nerve blurry and the arteries irregular, while the upper temporal vein was almost occluded. The patient was referred for general examination, the results of which were negative except as to blood pressure, which was 150/80. Wassermann was negative. Infected tonsils were found and a suspicious sinus. At the second examination, five days after the first, a number of hemorrhages were seen in the retina and several branches of the central vein were occluded. The tonsils were removed without effect on the eye condition, and the vision dropped soon after to 10/200 in spite of sweats and other forms of treatment. Suspicious ethmoid and sphenoid cells had been opened two weeks before, but no improvement in vision had as yet been seen. The disc was still much swollen, the central region was edematous, and numerous fresh hemorrhages were present.

Discussion. DR. H. P. WAGENER of Rochester, Minnesota, believed that in a case showing swelling of the nerve and signs of edema after so long a period some focus in the nerve itself must be thought of, such as tuberculosis or a new growth. He suggested diagnostic doses of tuberculin.

DR. DONALD OWEN mentioned seeing a case of thrombosis of the central vein following an ethmoid operation.

Thrombosis of the central retinal vein: dental pathology.

DR. NORA M. FAIRCHILD showed such a case with recovery of normal vision. Mrs. B. had come in with a complaint of intermittently faulty vision in the left eye for two months. Two nights previously the vision had failed and it had remained poor ever since. Vision was right eye 20/20 with correction, left eye 10/200 not improved. The left eye showed numerous retinal hemorrhages throughout the fundus, with the picture of occlusion of the central retinal vein. A general examination was negative except for some dental root pathology. Four teeth were extracted eight days after the first examination. Three days later vision in the left eye was 20/30, and the vision rapidly improved to 20/20 with correction. Now, five months after the onset of the trouble, this normal vision had been maintained and the fundus was practically normal except for a small crescentic area of atrophy at the outer edge of the disc. The field, which had at first shown a large scotoma involving the outer part of the fixation area, had cleared up until only a small paracentral scotoma was present.

Discussions. DR. WAGENER remarked that the fundus picture showed an unusual recovery to a practically normal condition.

Carcinoma of the cornea

DR. J. H. JUDD of Beatrice, Nebraska, presented such a case with gross and microscopic photographs. The patient, a man of seventy-four years, showed a ring-shaped growth completely surrounding the cornea and leaving only a small central area uninvolved. The growth had begun five years before near the inner limbus. Vision was reduced to light perception and the eye was painful. Marked arcus senilis was present. There was no evidence of glanular involvement. The eye was enucleated and sections showed a squamous-cell carcinoma, parts of which involved the deeper lymphatics between the limbus and the sclera. The author could find only reports of a few cases of primary carcinoma of the cornea, and none in which as in his case a complete ring had been found around the cornea.

Retinal arteriosclerosis and retinitis

Dr. H. P. Wagener of Rochester, Minnesota, presented the paper of the evening, illustrated by lantern slides. The different grades of arteriosclerosis classed as 1, 2, 3, and 4 were shown in slides. Pictures were shown illustrating the changes seen in benign hypertension, malignant hypertension, glomerulonephritis, and the somewhat rare cases of localized endarteritis. Statistics were given showing the relation between fundus changes and clinical conditions such as cerebrovascular accidents and death. The types of picture seen with diabetes were described. In answer to a question as to the occurrence of arteriosclerosis confined to the retinal vessels without other evidence of hypertension, Dr. Wagener said he believed this occurred but that it was often a sign of diabetes. He quoted cases in which diabetes had been suspected from the fundus picture and which in spite of several negative urinalyses and blood sugar examination had finally shown signs of diabetes.

Discussion. Dr. Rodney Bliss mentioned the value of the speaker's conclusions as to the prognosis in heart failure as indicated by a stationary or progressive condition of the retinal lesions.

S. R. Gifford,
Reporter.

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EYE STRAIN AT DIFFERENT AGES

Eye strain is generally nerve strain from use of eyes. Its unusual and rare effects may be found as widely distributed as the important nerve connections and nerve functions of the body. The form in which the strain is likely to be manifest is connected to some extent with the age of the patient. Eye strain may cause either sensory or motor disturbances. The former are more commonly recognized, but the latter are also important.

In early childhood the convergent strabismus associated with hyperopia is the most frequent and important effect of strain of accommodation, and in a large part of the cases the squint is permanently cured by complete removal of that cause. This should be the first thought of the oculist as to such cases. Twitchings of the lids and face, choreic movements, and even epileptiform seizures, arise from eye strain in a few cases. Usually they are associated with exceptionally high ametropia; but a moderate error of refraction, influencing a defective nervous system or the sequels of acute disease, may help to establish or perpetuate such disorders. In rare cases young children have nausea and vomiting from eye strain—car sickness—when riding on electric or steam trains; and marked migranous attacks of headache may be due to eye strain.

During school life eye strain due to ametropia, or to bad habits in using the eyes, is the most common cause of headache; and a large proportion of the recurring or habitual headaches of adult life have been established at this time. This is the period for the production of myopia, by undue and continuous exercise of convergence. Myopia is not commonly attended with headache, although astigmatism, which may help to cause or increase myopia, may also cause headache. Many cases of habitual headache, encountered later, have been developed and fixed by eye strain at this period. More directly connected with the eye strain of myopia is a form of aching of the eyeball, particularly likely to

come on when myopia is developing. With myopia, although sometimes without it, may come exophoria accompanied by headache and vertigo, in other words muscular asthenopia.

In early adult life, the habits and occupation of the patient are most likely to determine the occurrence of eye strain. Those who live chiefly outdoor lives commonly escape; although astigmatism and high hyperopia may cause strain at this time. Likely to cause eye strain are indoor occupations such as needlework, writing by pen or machine, most kinds of office work, watching faces (as by teachers or salesmen), fine mechanical trades, and the reading required in various professions. Among these people, headache is still the most common manifestation. But many other symptoms may be traced to eye strain as the sole or a contributing cause. Anorexia, dyspepsia, nausea, poor nutrition, anemia and other chronic departures from health should suggest inquiry into this as one of the possible causes of impaired health.

With middle age, diminished power of accommodation may cause eye strain in one whose eyes have previously given perfectly satisfactory service without undue nerve effort. Headaches, vertigo, and nausea may develop, and there is also a susceptibility of conjunctival irritation or inflammation. This is not quite the same form as arises in childhood. But ocular hyperemia, burning, and inflammation from this cause may persist and recur in spite of local applications. These cases are difficult to distinguish from what is often regarded as a senile degenerative change in the conjunctiva. The association of symptoms with use of the eyes in near seeing generally suggests that eye strain has arisen, although in a patient previously free from it. At this age mental disturbances arising from eye strain have been reported by well known and qualified observers. The relief afforded by removing the strain is often necessary to establish the diagnosis.

After fifty years of age, it is sometimes supposed that accommodation has become unimportant in causing eye strain. This is not the case. Accommodation may be important until after 70 and often is important until after 60. The glasses worn for presbyopia often allow the avoidance of eye strain when reading, by shifting the book a little farther away or by looking through the glass obliquely. But for distant vision these resources to save the eyes from strain are not available, and at this time of life the strain is often felt more in distant vision than for near. In patients accustomed to distinct vision, low hyperopia or astigmatism that never caused eye strain in early life may cause it when the whole accommodation is only a little more than the error of refraction.

The patient accustomed to distinct vision all his life will not willingly give it up. And the low error that he can overcome is more likely to cause strain than a higher fault of focus that could not be corrected by his ciliary muscle for more than a few minutes at a time. The symptoms of eye strain coming on gradually, at a time of life when it is not expected, are very likely to be overlooked or misinterpreted. Most patients can not give a definite account of their trouble. Only careful measurement of the refraction, with the therapeutic test of wearing glasses for distant vision, may settle the diagnosis. The symptoms may be some of those encountered earlier in life, but often they will not be typical and characteristic, as in younger patients. Excessive lacrimation may be present, or inability to concentrate attention on what is read. The disturbance is apt to be thought of as merely senile. The suffering from headache may be less acute than in younger people. But relief from it will be equally appreciated. Even when not expected, eye strain must be kept in mind and considered as a possible cause for symptoms.

Edward Jackson.

RADIUM AND THE EYE

The first few years after the introduction of radiotherapy in ophthalmology were marked by great caution in its employment—to such an extent that failures often resulted from inadequate dosage.

Many radiologists and ophthalmologists have believed that it was unnecessary to protect the eye by the use of filters. But others argue that proper filtration makes either roentgen or radium radiation both safer and more effective.

Our knowledge of the histologic changes resulting from overdosage was enriched by Lane, who confirmed previous clinical experience of disturbances in the cornea, the bloodvessels, and the retina. She further showed that, while dosage had an important influence on the tendency to such changes, heavy filtration was capable of preventing injury even in the presence of high dosage.

That Lane, as well as other laboratory investigators, did not encounter cataract as a result of radiation may have been due to the fact that the eyes of experimental animals were enucleated within a few months after exposure to the rays, whereas in human beings lens opacities have been first noticed at least a year, and usually several years, after radiation.

De Vries (Klinische Monatsblätter für Augenheilkunde, 1929, volume 82, page 145) points out that carcinoma of the eyelid lends itself especially well to the study of radiotherapy, its dosage and results, and also its complications, because this type of tumor is frequent and because its location favors investigation of the influence which filtration may have upon the subsequent integrity of the ocular tissues.

A number of the most enthusiastic writers on the subject have remained completely silent as to the problem of injury from the rays. New and Benedict, and also Withers, in this Journal, have recommended a lead prothesis for protection of the eyeball; while Sattler declared that in his experience such protection was unnecessary.

The material studied by de Vries in the Dutch cancer institute at Amsterdam included forty-nine cases in which the diagnosis of lid carcinoma was recorded. The diagnosis was usually clinical, but in three doubtful cases was confirmed by histologic study.

Combined treatment with roentgen and radium radiation was formerly employed but has been abandoned since 1920. The method of fractional dosage at rather long intervals has also been avoided as giving poorer results and often leading to tolerance of the cancer cells for radiation, as pointed out by Delbet. The customary radium dose was 250 milligram hours for each square centimeter. The filters used were 0.5 millimeter of iron, 0.5 millimeter of lead, and one millimeter of India rubber; the application being immediately on the eyelid.

One of the earliest patients was treated at first with a small dose, and failed to obtain a cure. Four other patients had been "inoculated" with radium elsewhere (that is they had had fractional doses, with the presumable effect of rendering the cancer cells insensitive to radiation); and only one of these four yielded to new radiation. Other thirty-two patients were treated with radium according to the method outlined in the preceding paragraph. Of these thirty were cured, twenty-two of them remaining under observation more than one year, twelve more than three years, and seven for from five to eleven years.

Two recurrences were seen. One, five years after the original treatment, yielded to a renewed application to radium, and remained well for five years of further observation. In the second case the relapse occurred six months after the first treatment, but the patient declined further treatment, and this case is included in the two failures.

These results are substantially in

accord with those obtained by Quigley (eighty-nine cures in ninety-six cases) and Régaud (thirty-three cures in forty-one cases), and they emphatically controvert the statement of Dupuy-Dutemps that radium treatment is usually followed by recurrence.

The cosmetic result is always excellent, the site of the tumor being indicated merely by a pale soft scar, a few small teleangiectases, and permanent loss of eyelashes in the exposed area, with occasional slight thinning of the lid margin.

The lesser disturbances seen after the radium treatment of these tumors included mild chronic irritation and in four cases abnormal dilatation of the conjunctival vessels.

In three cases, a few months after the treatment, very fine punctate and linear epithelial lesions were demonstrable by staining with fluorescein, in the quadrant of the cornea nearest the center of radiation. These lesions disappeared later.

In two cases there was a localized atrophy of the iris, in a forty-five degree sector corresponding to the center of radiation; and in each of these cases there was complete uniform opacity of the lens; so that four and three years respectively after the radiation poor vision developed. In addito these "ripe" cataracts, three patients showed fine lens opacities beneath the posterior capsule, but only in the sector directed toward the center of radiation. These slight opacities had no effect on visual acuity. Their time of onset could not be ascertained, nor could it be discovered whether they were progressive. The radiations had taken place respectively five, eight, and ten years earlier. The lens disturbance in these three cases was strictly unilateral.

The fundus was recorded as normal in every case, except in the two cases with mature cataract; and in these two cases light projection was good. Glaucoma was seen once, two years after a very heavy dose of radiation.

De Vries is satisfied that the effect of the rays upon the lens is not direct, but that the basis of radiation cataract is a local injury of the eye. Whether this consists of vascular changes in the ciliary body or whether a general factor plays a part in producing the injury, he is not prepared to say.

A joint paper by den Hoed, Stoel, and de Vries (Klinische Monatblätter für Augenheilkunde, 1929, volume 82, February, page 158) suggests that the mere factor of distance between the vital structures of the eye and the center of radiation is important, and that the most suitable form of protective screen may be found in a thick layer of some organic substance, like paraffin, introduced into the conjunctival sac.

There is serious lack of agreement as to dosage and as to the necessity for filtration, and it may be a long time before the last word is said on either question. In a typical case of basal-cell carcinoma of the lower eyelid, about one square centimeter in area, treated by a radiologist in cooperation with the writer of this comment, a single dose of twenty milligram-hours proved adequate for most satisfactory cure. In this case the treatment was by direct contact of the radium tube (0.4 mm. of Monel metal) with the tumor. Without filtration, the growth is attacked by the rays of long as well as of short wavelength, greatly lessening the time of exposure required, and therefore diminishing the danger to the deep ocular structures, since the longer wavelengths are filtered out by the superficial tissues to a much greater extent than are the short wave-lengths.

W. H. Crisp.

PROFESSIONAL ADVERTISING

It has long been a belief held by younger practitioners of medicine that there are certain men in the profession who can "get away with" anything; that is, that without unpleasant consequences to themselves they can do and say things which men of less assured position would not dare to do or say. In Chicago at least this im-

pression must have been shaken by the action of the Chicago Medical Society in disciplining one of its most prominent members for not conforming strictly to the medical code of ethics. The subject is here discussed because its broad implications extend into every branch of the practice of medicine.

Briefly stated, a prominent urologist of Chicago was recently expelled from the Chicago Medical Society because he refused to sever his connection with an organization which had come under the ban of the medical profession of Chicago for unethical conduct. Himself a man of high ability, of recognized standing, of good moral character, and showing great civic interest, nothing in the charges reflected upon him beyond the fact that he preferred to set his own standards of conduct above those recognized by his fellow practitioners.

The daily press, with its tendency to complicate a simple situation, has endeavored to make of the expelled physician a martyr to the cause of providing people of moderate means with the highest type of medical service at a cheaper rate than heretofore possible. But the fact is that he was no more active in this direction than many other men of equal or less attainment, and this feature enters into the question only in an indirect way.

The history of the controversy shows that some years ago certain public-spirited laymen of Chicago founded an organization called the Public Health Institute for treatment of venereal diseases at small fees. The idea was a laudable one, but from the beginning the Institute's methods of advertising and of securing patients ran counter to the ethics recognized by the Chicago Medical Society; and the physicians who were employed by the Institute to administer treatment were warned of that fact and were informed that they must either sever their connection with the Public Health Institute or be brought before the Chicago Medical Society for disciplinary measures. As a result, most of the men who had allowed their names to be associated with the Institute in a medical capacity promptly severed their connection with it; yet, not taking warning from this fact, the Institute continued its objectionable methods.

Incidentally there is an otherwise highly ethical organization called the Illinois Social Hygiene League, of which the expelled physician is the chairman. He entered into the controversy by virtue of the fact that this League, for a specified sum paid by the Institute annually, treated certain patients referred to it by the Institute who could not afford the Institute price. Medical members of the League, including the physician recently expelled, were warned that their indirect connection with the Institute was contrary to medical ethics, and that if they did not sever this connection steps would be taken to discipline them. When the offending member of the League and of the Chicago Medical Society would not yield, nothing remained in spite of his prominence but to bring him before the Society's disciplinary committee; and after due hearing this committee presented the recommendation which resulted in his expulsion from the Society.

In spite of the statements published in New York and Chicago newspapers and elsewhere, at no time has it been a question of endeavoring to provide cheaper ethical methods of treatment of citizens who could not afford to pay higher prices. Most physicians are quite willing to welcome some method whereby the benefits of scientific medicine may be placed within the reach of the man of moderate means, who is truly as much entitled to them as his richer or poorer fellow citizens. But to do this in any but a strictly ethical way would open the doors to more evils than it corrected.

The Chicago Medical Society had formally declared its readiness to cooperate with the Public Health Institute if the latter's methods of

procuring and handling patients could be brought to the standard demanded of the members of the Society; but, as recently declared by the official bulletin of the Society, the Public Health Institute was regarded as a thoroughly commercialized enterprise, furnishing treatment inferior in quality and excessive in quantity, and not devoted to the purpose of furnishing treatment to those who would otherwise be deprived of it.

No matter how high a man may stand in the medical profession, he is bound equally with the merest beginner to the rules of ethics, and any decision as to need for changing those rules must be arrived at by general agreement of the medical profession, which is better qualified in this matter than any group of laymen, not excluding the gentlemen of the public press. It is a basic principle of the code of medical ethics that a physician must not advertise himself to the public in any other way than through the quality of the service he renders to his patients.

A situation similar to that which has arisen in the urological profession of Chicago may at any time develop among ophthalmologists, and one of the important duties of those of us who desire to maintain the high standards of medical practice in this country is to be on the lookout for any entering wedge which might create such a problem in our branch of medicine. *Clarence Loeb.*

BOOK NOTICES

American Ophthalmological Society, volume 26, transactions 1928. Octavo, cloth, 465 pages, illustrated, including six plates in colors. Philadelphia, published by the Society.

Each volume of this Journal has included the notice of a volume of these transactions. This report of the proceedings of the sixty-fourth annual meeting, held in Washington in May of last year, is of more than the average size of those that preceded it. It includes eight theses, 153 pages, written by candidates for membership in the Society; the writing of such a thesis being one condition of admission to membership.

Such theses are first published in the transactions. The subjects discussed by them in this volume are: choroidal melanomas, by W. B. Doherty; the aqueous humor, by A. M. Yudkin; posterior lenticonus, by W. S. Reese; congenital pigmentation of the cornea, by E. L. Goar; comparative anatomy of the extraocular muscles, by A. De H. Prangen; the modern ophthalmoscope, its construction and use, by J. S. Friedenwald; detachment of Descemet's membrane, by B. Samuels; biochemical studies of the blood in patients with senile cataract, C. S. O'Brien.

Of the twenty-five original papers presented at the annual meeting, nine are on topics in pathology and tumors. Most of the others are largely clinical, but two report investigations in experimental physiology, one describes test letters that comply with the physiologic requirements of a visual test object, and one discusses the intravenous use of typhoid-paratyphoid vaccine in diseases of the eye. At this meeting, out of a total membership of 190, there were 106 present, But there were also thirty-four guests present who were invited to take part in the discussion. The courtesy of this exclusive society toward other ophthalmologists who attend its meetings needs to be more widely appreciated; and the transactions, which may be obtained through the secretary, Dr. Emory Hill, of Richmond, Virginia, ought to be more widely purchased and read by ophthalmologists who are not members.

Edward Jackson.

Société Belge d'Ophtalmologie, bulletin of meeting in November, 1928. Paper, octavo, 144 pages, illustrated. Published by the society, Brussels, 1928.

The Belgian Society of Ophthalmology holds two meetings each year;

and this bulletin gives the minutes, papers and discussions of the second. The papers are mostly published in abstract, as are the discussions on them. In this issue are given twenty-five papers, a brief memorial sketch of Dr. V. Tonglet of Brussels, and a list of members of the society. Of the subjects of communications presented to this meeting, almost half were reports of unusual cases. These reports are of practical interest, and help to supplement the personal experience of any one engaged in ophthalmic practice. Among these cases were: melanosarcoma of the choroid, invading the orbit and many other parts of the body; epithelioma of the limbus, followed for eighteen years; cyst of the bulbar conjunctiva, following injury by the branch of a tree; and a case of sympathetic ophthalmia followed iridectomy for glaucoma and one after a cataract operation. *Edward Jackson.*

Deutsche ophthalmologische Gesellschaft (German Ophthalmological Society), Heidelberg, 1928. Octavo, paper, 536 pages, illustrated. Edited by A. Wagenmann. Munich, J. F. Bergmann, 1929.

The first session of the forty-seventh meeting of the German Ophthalmological Society, August 6, 1928, opened with a celebration of the birth of Albrecht von Graefe, born May 22, 1828. There was an oration by Theodor Axenfeld, and a response by Allvar Gullstrand, who was awarded the Graefe medal. A portrait of Graefe as frontispiece and the above addresses open this volume. This is a graceful acknowledgment of the debt to Graefe; whose informal gatherings of his friends, to discuss topics bearing on ophthalmology, gradually grew into the "Heidelberg Congress". But the scientific proceedings were little abridged by this ceremony. The volume contains sixty-one scientific papers and the discussions upon them, and also accounts of nineteen demonstrations of cases, specimens, and apparatus at the "demonstration session".

These communications cover a wide range of subjects. Indeed, if one sought to keep in touch with the current German literature of ophthalmology by reading a single series of publications the accounts of these congresses would be the series to choose. It has not been very customary in Germany to be content with publishing but once an author's observations on a particular subject. It is more common for him to write a paper for Graefe's Archiv, or the Zeitschrift, or the Klinische Monatsblätter, to publish a statement of views in one of the weekly or monthly general medical journals, and to bring a summary of views and conclusions in the form of a short paper to the "Heidelberg Congress," where it is very likely to be freely discussed by colleagues. In this way the reports of the congress have come to represent in a broad way the progress of ophthalmic science among German-speaking ophthalmologists.

In the recent years the subjects brought before the congress have been more generally of practical interest and importance than formerly. In this volume are four papers, with discussions by nine speakers, on the ocular aspects of tuberculosis, and its relations to phlyctenular disease. In ten papers on the intraocular fluids and tension and on glaucoma, and in the remarks made by the eighteen members who entered into the discussion of these papers, the emphasis on practical points is quite noticeable. In the paper by Seefelder on the pathologic anatomy of retinitis circinata, illustrated by a colored sketch, the practical importance of the macular lesions is brought out. Gonin directs attention to the healing of retinal lacerations, and von Hippel to rhinogenous retrobulbar neuritis. Of course there are papers farther removed from practical application, as on the determination of the center of rotation and on after images.

Edward Jackson.

Grundriss der Augenheilkunde für studierende und praktische Aerzte (Outline of ophthalmology for students and practicing physicians). Professor Dr. A. Brückner, director university eye clinic, Basel, and Professor Dr. W. Meisner, director university eye clinic, Greifswald. Second, improved edition. 601 pages with 221 reproductions in text and nine color plates. Price, paper covers, 25.00 marks, bound 27.00 marks. 1929, Georg Thieme, Leipzig.

This new "Outline of ophthalmology" appears now in its second edition. In a country which has many excellent publications of this type, it is a proof that the book is both practical and timely.

The chief innovation of Brückner and Meisner's textbook is its abbreviated and concise character: the volume contains about six hundred pages, which is twenty-five to fifty per cent less than the regular size of ophthalmic textbooks in the German language. Obviously the post-war economic conditions necessitated this change, and the task of creating a textbook less expensive and sufficiently complete for students and nonspecialists has been successfully fulfilled by the authors. The fundamentals of ophthalmology; namely anatomy and physiology of the eye, clinical pathology, methods of examination, and therapeutics, are presented in an exhaustively clear way without omitting even rare conditions and controversial opinions.

The new achievements in ophthalmology, which constitute its progress in the last quarter of a century, are presented in Brückner and Meisner's "outline" not as incidental additions or changes, commonly seen in "revised" editions of old textbooks, but as integral parts of a thoroughly and organically modern "outline".

The up-to-date presentation of the subject is evidenced in every part of the book—in the discussion of intraocular lymph circulation, as well as in the classification of retinal diseases; in the presentation of physiological optics on the basis of Gullstrand's dioptric system, as well as in the biomicroscopy of corneal and lenticular conditions. Only in a few instances the authors' conception does not seem to be in accord with newer advances in ophthalmology. In detachment of the retina they still advocate the pressure bandage—an obsolete procedure which is deprecated by modern students of retinal separation; on the contrary Lagrange's colmatage and Gonin's cauterization methods, which deserve attention because they are both based on sound pathogenetic considerations and are followed by encouraging results, are hardly mentioned. In the treatment of vernal catarrh the occlusion bandage and the removal of hypertrophied tissue (both of doubtful value) are referred to, while the use of radium is omitted. Considerable attention is paid to "rheumatism" as an etiologic factor of iritis, and in the chapter on "rheumatic" iritis focal infection is discussed in six lines. . . . as an American folly!

In regard to the arrangement of material one would prefer to see "methods of examination" preceding and not following "diseases of the eye". The introduction of special chapters on "eye diseases and heredity", "prophylaxis", and "blindness and care of the blind" is to be commended because it emphasizes problems usually neglected.

The illustrations are sufficient in number, good in selection, and excellent in reproduction. The color pictures of primary syphilis of the eyelid, of conjunctival tuberculosis, and of senile macular changes in red-free light will also be enjoyed.

M. Beigelman.

Saggi di Oftalmologia, volume 4, 1928. Paper, large octavo, 638 pages, 2 plates, 139 illustrations. Rome, Tip. Pol. "Cuore di Maria", 1929.

This volume, a little larger than its predecessors, maintains under the

editorship of Professor di Marzio its high standards of contribution to the current literature of ophthalmology. Its twenty-three papers contributed by twelve members of the staff of the Regia Clinica Oculistica (Royal Ophthalmic Clinic) of Rome take up a wide range of subjects, approached from various points of view. About one-half the papers report experimental work, or studies made in histopathology. Almost one hundred pages are devoted to such studies of trachoma. There are papers more largely clinical, dealing with such topics as the following: glaucoma therapy, using adrenalin and glaucosan; mucocele of the frontal sinus; ultraviolet radiations for keratitis; lipiodol in diagnosis of diseases of the lacrimal passages; x-ray injuries to the eye; the influence of anisometropia on the ocular muscle balance.

This year each of the papers is accompanied by an abstract in English; which to those who do not easily read Italian makes the work more valuable as a reference book. There is a list of the papers already found in the literature, published by members of the staff of the Royal Ophthalmic Clinic, and statistics as to the 9815 patients treated at the clinic, including operations and results of treatment. The illustrations are chiefly of clinical cases, and of microscopic sections of tissues. On the whole this book is worth having in any reference library devoted to ophthalmology. It reflects a scientific movement that compares well with the recent political and industrial activity of Italy.

Edward Jackson.

Ophthalmological Society of Egypt, twenty-fifth session, 1928. Paper, octavo, 114 pages, 2 color plates and 9 illustrations. Cairo, Misr Printing Press, 1928.

The color plates show details of microscopic sections, but colors have also been used in some of the text illustrations. The honorary members of this society live in Paris, London, Vienna, Athens, Naples, and other cities of Europe, and even one in Philadelphia. But the general list of members consists chiefly of ophthalmologists who have been born and trained in Egypt. They show the influence of Western ophthalmology, but are ready to rely on their own resources. The percentage of outpatients presenting who are already blind in one or both eyes continues to diminish. From 15.6 per cent in 1909, it had gone down to 9.8 per cent in 1927. The arrangement of papers under the various headings shows: diseases of the lids, 3; conjunctiva and cornea, 5; Glaucoma, retina, and fundus 3. A paper on instruments refers to contact glasses, triplex glass, vital staining with biomicroscopy, and fundus photography. A paper on postoperative disturbances reports three cases of acute glaucoma following cocaine anesthesia and two cases of corneal ulcer after Snellen's operation. In one case chloroform anesthesia seemed to stimulate to activity a pulmonary tuberculosis. In this volume the papers are all published in English.

Edward Jackson.

Historya Okulistiki w Polsce w wieku XIII-XVIII. (History of ophthalmology in Poland in the thirteenth to the eighteenth centuries). By A. Bednarki. Paper covers, 116 pages, 12 illustrations. Lwow, Naklad Towarzystwa Naukowego.. 1928.

This small but concise volume is the first attempt at a history of ophthalmology in Poland during the remote and obscure period of the thirteenth to the eighteenth centuries. In the XIIIth century Witelon, a philosopher and astronomer of European fame, wrote a book in Latin on "optics," which served to generations of physicians as the only source of information in physics and physiologic optics. In the fifteenth century the first oculists appeared in Poland. Their competence was in accord with the general standards of medieval medicine. As a curiosity the exorbitant fees of

these "specialists" are mentioned. The sixteenth and seventeenth centuries are characterized by numerous medical publications in the Polish language. Of these the "herbariums" which contained considerable information regarding diseases of the eye, developed a wide ophthalmic nomenclature. Only in the eighteenth century did the naïve conceptions and superstitions which dominated the practice of ophthalmology in the Middle Ages start to disappear, giving place to a scientific trend in the healing art.

Of considerable interest is the last part of the book, which presents three essays on the history of trachoma, on cataract surgery, and on spectacles during the same period.

M. Beigelman.

Physiologische Optik. Dr. A. Koenig, Jena. Cloth, octavo, 251 pages, 70 illustrations. Akademische Verlagsgesellschaft, Leipzig, 1929.

To one who reads German this book on physiologic optics can be highly recommended. It covers the subject rather briefly, and almost without the algebraic formulas that so frequently turn the ophthalmologist away from the subject. The plan of this book originated with Professor Pulfrich and is based upon manuscript left at his death.

The chapter heads indicate the scope and arrangement of the contents. A free translation gives: 1, vision and the other senses; 2, the eyes, their structure, defects, retinal changes by light, defensive mechanism, the visual field, and eye movements; 3, color sense; 4, vision of cones and rods, adaptation—the duplicity theory; 5, stimulation of vision, brightness and colors; 6, contrast and irradiation; 7, time relations of light stimuli; 8, after images and their changes; 9, color theories; 10, heterochromic photometry; 11, the measurement of colors; 12, visual acuity; 13, judgment of space relations, depth perception, and optical illusions; 14, perception of movements; 15, correspondence of the two retinas; 16, depth localization and stereoscopy; 17, reciprocal actions of the two retinas.

The illustrations in this book are chiefly diagrams of anatomy, apparatus, and graphs of function, studied by experiment. They all help to present the subject in form that is most readily understood. The text is quite clearly written, when it is remembered that it often has to deal with abstruse, theoretic, philosophic discussion of questions that run into psychology and even metaphysics. Excellent as these discussions are, they fail to emphasize the immense practical importance of many facts that are only discussed as physiologic optics.

There is a good index of topics and another of the names of writers mentioned. These, with the footnote reference to the literature bearing on each subject, will take the place of any formal bibliography, and make this treatise valuable as a work of reference. Of course the bulk of the references are to the writers of continental Europe; but the few English and American writers who have discussed physiologic optics in former years are not entirely slighted.

Edward Jackson.

A textbook of eye, ear, nose, and throat nursing. Abby-Helen Denison, R.N., instructor Massachusetts Eye and Ear Infirmary. Cloth, octavo, 295 pages, 22 illustrations. Price $3.00. The Macmillan Company, New York, 1929.

In general, this volume is extremely well adapted to its purpose, which is to further the training of nurses who can be relied upon to perform satisfactorily the special duties required by physicians in the care of eye, ear, nose, and throat patients.

The therapeutic and operative measures described are those employed in the Massachusetts Eye and Ear Infirmary at Boston. The volume is thus a reflection of the preferences of several of the leading surgeons of that institution, and as such con-

tains many details which will be of interest and often of advantage to the physician practicing the same specialties elsewhere.

It is a frequent source of complaint with eye, ear, nose, and throat surgeons, and above all with ophthalmologists, that nurses in the general hospitals to which they must take their patients are extremely ignorant of the care necessary for those patients. While, therefore, we may wonder whether the number of nurses constantly engaged in this special work will be adequate to repay the expense of publication, on second thought it seems probable that such a volume may serve as a textbook for training undergraduate nurses in these special lines of work. It is quite suitable for such a purpose, provided sufficient practical demonstration of its details can be arranged by the instructor.

Only in a few minor details is this volume open to adverse criticism. On the whole very well edited, it contains a few errors in orthography, a few instances of the use of technical words which have not previously been explained although they may be unfamiliar to the student nurse reader, and a few loose or positively inaccurate definitions (for example, the third nerve does not "enervate" but innervates the sphincter muscle of the iris; and not all chalazia are noninflammatory).

But both author and publisher are to be congratulated on the excellence of this textbook. *W. H. Crisp.*

Outline of refraction with the retinoscope and cycloplegia. Willis S. Knighton, M.D., instructor in refraction at the New York Eye and Ear Infirmary. A pamphlet, stiff paper covers, 46 pages. Published by the author, New York City. 1929.

Ophthalmologists agree that refraction constitutes the greater part of their work, and realize that their reputation, in many instances, is made or destroyed by the satisfaction or dissatisfaction of the patient with the correcting lenses. The first essential, therefore, for the successful ophthalmologist is to have a practical working knowledge of this branch of his specialty.

It is clearly stated in the preface that this is an outline of refraction, and that theoretical considerations have purposely been omitted. The author's careful selection and clear classification of the essential points make the work of especial value to the student whose mind is often overburdened with theory. Without a brief outline to consult it is impossible for him to arrange the practical points in a way which will permit him to apply his knowledge successfully and satisfactorily in office and clinic practice.

It is the same practical treatment of the subject which is valuable to the practicing ophthalmologist who cannot spare the time to read a long treatise on refraction, but who desires to refresh his memory on the subject. The busy practitioner will profit by the suggestions of an experienced practical teacher who has encountered and overcome many technical difficulties. To the teacher of refraction, and to those who may be preparing lectures, these pages will prove of inestimable value.

Conrad Berens.

Note by the editor: Dr. Knighton lays stress upon a method of checking the strength of astigmatic correction which he calls "crossing through" and which consists essentially of rapid reversal of the axis of a superimposed cylinder so as alternately to increase or decrease the total cylindrical strength. The purpose of this test corresponds to that of the cross cylinder test for strength, except that the former is rendered somewhat less reliable on account of the fact that in both positions of the "crossing through" the average plus or average minus effect before the patient's eye is either increased or diminished, whereas with the cross cylinder

the average plus or minus effect is unaltered.

Very little is said as to a method for refining the axis of the cylinder selected upon the basis of retinoscopy. It is a pity that most writers on refraction seem not to be fortunate enough to have become familiar with the brilliantly exact results obtainable from the use of the cross cylinder test for the axis.

Tuberculosis experimental del ojo. Thesis presented by Dr. Baudilio Courtis to the National University of Buenos Aires. 75 pages. Frascoli y Bindi, Buenos Aires, 1928.

This rather bulky thesis includes only thirty-five pages of actual text, with fourteen black and white illustrations (mostly photomicrographs) and six color drawings of tuberculosis of the conjunctiva, cornea, and iris. It represents no especially original features, but states the conditions found in human cases and the results of the author's experimental inoculation of tuberculosis in the rabbit. The writer accepts the view that ocular tuberculosis is secondary and of endogenous origin. *W. H. Crisp.*

CORRESPONDENCE

Vienna clinics: a correction

To the editor:

In the June, 1928, number of the American Journal of Ophthalmology Dr. Leo L. Mayer in his article "Impressions of European clinics," in describing the routine work of the Viennese eye clinics, states that "fields, taken infrequently, are however very exact and painstakingly outlined."

For two years, 1924 to 1926, I worked as "hospitant" in the Dimmer and the Meller clinics. So, after having labored at great length and spent much time and patience in taking scores of fields there, I can hardly agree with Dr. Mayer's view that fields are taken infrequently. I should never have thought of presenting an old patient with glaucoma to the assistant in charge without having taken a new field, because he would have expressed in no uncertain language his astonishment at such a proceeding.

In regard to the operative procedures Dr. Mayer remarked that the cystotome was the instrument of choice for the capsulotomy. In my time at the Meller clinic the capsule forceps were used almost entirely. I cannot remember ever seeing my chief, Professor Meller, use the cystotome. *Dohrmann K. Pischel.*
San Francisco

An association for research in ophthalmology

To the editor:

The comments by Dr. Lawrence Post in the editorial column of the April number of the Journal on "an association for research in ophthalmology" certainly bring up a subject of active interest. Every aspect should be considered. If, as we understand, the object of the editorial was to call forth discussion, certain points are worthy of attention.

1. Every ophthalmologist (unlike some other branches of medicine) is trained to collect evidence from various types of detailed study and to make deductions of a strictly scientific nature before he interprets them in terms of clinical medicine. He is fundamentally a research worker of no mean order, even if he never views his efforts from that angle. This type of training is what has kept ophthalmology in the forefront of medical advance. It is definitely practical to practice ophthalmology and at the same time to do research work.

2. Many of the younger men are greatly interested in research, needing only some sort of encouragement to start their efforts. Their interest is often dampened by a "chief" whose interests have exaggerated the surgical side of the work.

3. It has been difficult to award sufficient space in ophthalmological journals to purely scientific studies.

4. Many men feel that research is confined only to the purely biological

aspect of the work, or they think of it in terms of higher mathematics. Attention should be called to the fact that every man is equipped to study some problem. It only remains to arouse his interest in a subject within his understanding. He will grow to meet its needs as he works. This educational value of research should not be lost sight of.

5. No one knows how many men are interested in a special problem until he has been well started on it himself. There are six or seven young men at this time making material progress on subjects related to glaucoma.

6. Most of the objections to the formation of such a society have been answered by the success of the Association for Research in Nervous and Mental Diseases.

7. There are an infinite number of problems at hand which do not need the support of a great foundation or the finances of a millionaire to insure success in their solution.

8. The greatest stimulation to research is research. Research is fundamentally work for a young man. The younger men of this country are not getting the stimulation to do research which they deserve.

Brooklyn *John N. Evans.*

ABSTRACT DEPARTMENT

Abstracts are classified under the divisions listed below, which broadly correspond to those formerly used in the Ophthalmic Year Book. It must be remembered that any given paper may belong to several divisions of ophthalmology, although here it is only mentioned in one. Not all of the headings will necessarily be found in any one issue of the Journal.

CLASSIFICATION

1. General methods of diagnosis
2. Therapeutics and operations
3. Physiologic optics, refraction, and color vision
4. Ocular movements
5. Conjunctiva
6. Cornea and sclera
7. Uveal tract, sympathetic disease, and aqueous humor
8. Glaucoma and ocular tension
9. Crystalline lens
10. Retina and vitreous
11. Optic nerve and toxic amblyopias
12. Visual tracts and centers
13. Eyeball and orbit
14. Eyelids and lacrimal apparatus
15. Tumors
16. Injuries
17. Systemic diseases, including parasites
18. Hygiene, sociology, education and history

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1. GENERAL METHODS OF DIAGNOSIS

Fazio, Gaetano, **The "hemistereoscope", a new apparatus for diagnosis of simulation of monocular amaurosis.** Arch. di Ottal., 1928, v. 35, March, p. 133.

The article contains several tabulated stereoscopic charts by which malingering can be easily detected, using combinations with prisms in various positions. (See also this Journal, 1929, Feb., p. 148.) *D. Alperin.*

Finnoff, W. C. **Difficulties in diagnosis of tuberculosis of the eye.** Ill. Med. Jour., 1929, v. 55, March, pp. 198-203.

Finnoff discusses the forms of tuberculosis in the various structures of the eye, citing four case records and presenting six photomicrographs and three fundus plates. His conclusions are: (1) All cases of tuberculosis of the eye present difficulties in diagnosis. (2) Tuberculosis of the eye may closely simulate other chronic eye diseases and in some cases the only positive means of determining the cause is microscopic examination or animal inoculation. (3) Tuberculin as a diagnostic agent is unreliable. It may aid in some cases. (4) Focal reactions in tuberculous lesions are not specific but may occur after the injection of foreign proteins other than tuberculin. (5) A diagnosis must usually be based on the history, clinical appearance, and course of the disease. If a focal reaction occurs after the injection of diagnostic doses of tuberculin it is merely additional evidence.

Ralph W. Danielson.

Franceschetti, A., and Guggenheim, I. **Velocity of precipitation of the blood corpuscles and its importance for ophthalmology.** Klin. M. f. Augenh., 1929, v. 82, Jan., pp. 1-20. (2 tables.)

The authors report on one thousand precipitation reactions on clinical patients, by the method of Westergreen, with results in tabular arrangement. It is not a specific reaction and must not be overestimated for different diagnosis. Eye affections as such, with the exception of purulent processes, usually do not influence the precipitation reaction, but tuberculosis, lues, rheumatism, and phlegmonous processes cause acceleration. Hence the authors think that for the ophthalmologist it is a method of examination which should be as unwillingly omitted as measurement of temperature. *C. Zimmermann.*

2. THERAPEUTICS AND OPERATIONS

Ascher, K. **An analgesic which causes prolonged lowering of intraocular pressure.** Archiv Oftalmologii (Russian), 1929, v. 5, pt. 3, pp. 311-316.

Nervocidin, an alkaloid obtained from an Indo-Chinese plant "Gasubasu", when instilled in the eye or injected subconjunctivally in a 1 to 1,000 solution, produces corneal anesthesia lasting from one to several days, a lowering of intraocular pressure which may become apparent only on the second or third day and which lasts for several days and even weeks, and a varying degree of miosis. The study of this preparation is as yet in an experimental stage, but some clinical uses of it are anticipated.

M. Beigelman.

Ascher, K. **Substitute for holocain.** Klin. M. f. Augenh., 1928, v. 81, Dec., p. 856.

Diocain (Ciba) in two percent solution as substitute for holocain is sufficient for tonometry. It is twice as toxic on the eyes of rabbits, and has a greater anesthetic effect on the human eye. It does not dilate the conjunctival vessels, and leaves pupil, accommodation and tension uninfluenced. It causes no general disturbances, and, except in glaucoma, no alterations of the corneal epithelium. On account of its toxicity, injection is warned against. *C. Zimmermann.*

Bettman, A. G. **Plastic surgery about the eyes.** Ann. of Surg., 1928, v. 88, pp. 994-1006.

The paper is intended to present several types of condition occurring about the eyes which may be treated by the general surgeon. In removing scars Bettman urges (1) delicacy in handling tissues, especially the edges of the wound, doing what pulling is necessary from the under surface with sharp hooks; (2) exact apposition of wound edges and underlying tissue; (3) deep sutures for the relief of tension, sometimes tied over inverted buttons; (4) immobilization during healing; and (5) early removal of sutures. The author then discusses enucleation, formation of eye socket, correction of sunken, boggy, wrinkled, folded, everted, inverted, or otherwise deformed lids, and transplantation of tissues, use of mucous membrane and preputial skin being suggested. Operations by stages are often necessary. (Two case reports and sixteen photographs.) *Ralph W. Danielson.*

Kaiser, J. H. **Ephetonin and eye.** Zeit. f. Augenh., 1928, v. 66, Dec., p. 432.

Ephetonin is Merck's substitute for the naturally occurring ephedrin. It is a weak mydriatic which does not influence the sensibility of the cornea and is easily counteracted by pilocarpin. It produces slight widening of the lid slit. When mixed with a dilute solution of homatropin it prevents the latter from affecting the accommodation, though it is ineffective if the homatropin solution is stronger than 0.5 percent. As a practical mydriatic without cycloplegic action Kaiser recommends

homatropin,	0.03—0.05
ephetonin,	0.50
water,	10.0

F. H. Haessler.

Magitot, A., and d'Autrevaux, Y. **Ocular tuberculosis treated by the antigen of Boquet and Nègre.** Bull. Soc. Franç. d'Opht., 1928, p. 378.

Four cases of ocular tuberculosis of different types, treated by injections of the methyl alcohol antigen of Boquet and Nègre, are reported. All showed healing. The antigen was developed by Bouquet and Nègre in Calmette's laboratory at the Pasteur Institute, and consists of a methyl alcohol extract of acetone-treated tubercle bacilli. The extract was first used experimentally in a study of tuberculous antibodies, where it was found to be of value in the complement fixation reaction. Two degrees of reaction were found, one indicating a healed or only slightly active lesion,

and the other indicating a focus of activity. Treatment is begun with minute doses, usually at biweekly intervals, being careful to avoid febrile reactions. An increase in weight and appetite occurs regularly during the treatment. The authors believe the antigen to be a distinct advance over the tuberculins. *Phillips Thygeson.*

Nègre, Robert. **The eye bath and its therapeutic value.** Bull. Soc. Franç d'Opht., 1928, p. 384.

Nègre pleads for rehabilitation of the eye bath as a worthwhile therapeutic measure, far superior to collyria. Among the many possible agents which can be employed are disinfectants, detergents, immunizing substances, sedatives, miotics, and mydriatics. A constant temperature should be maintained and the solutions should be slightly hypertonic so as to cause a slight drop in intraocular tension. In cases of bilateral ocular disease the author used baths for one eye and collyria for the other and found healing uniformly more rapid in the eyes treated with the baths. *Phillips Thygeson.*

Reganati, F. **Experimental researches on the histochemistry and the microchemistry of mercury in the ocular tissues and liquids.** Ann. di Ottal., 1928, v. 56, Dec., p. 1114.

The author injected two c.c. of mercury sublimate, dissolved in one c.c. of water, in adult rabbits daily. The animals usually lived for four or five days. Fluid was drawn with a syringe from the aqueous and the vitreous at intervals of half an hour, one hour, two hours, and four hours after the first injection. Mercury was not found present until four hours after the primary injection. If the injections were discontinued the granules did not reappear till twenty-four hours later in the aqueous and twenty hours later in the vitreous. There were no visible alterations in the enucleated eyes.

Microscopically mercury was not discovered in any of the ocular tissues earlier than one day after the first injection, when granules began to appear in the corneal parenchyma, in the sclera, and in the subconjunctival structures. In eyes enucleated twelve hours after the second injection particles appeared not only in cornea, sclera, and subconjunctival tissue but also in the subdural space around the optic nerve, and in iris, choroid, and retina. No granules were present in either the epithelium or the endothelium, but the greater quantity was most constantly found in the spaces of Fontana, where it was invariably present in the animals that had died from mercurial poisoning.

The author concludes that, because of the painful inflammation and adhesions produced by subconjunctival injections of bichloride of mercury, the parenteral method is to be preferred, as the drug is effectively and most easily absorbed in this way.

Park Lewis.

3. PHYSIOLOGIC OPTICS, REFRACTION AND COLOR VISION

Gasteiger, Hugo. **Dark adaptation after light adaptation to various spectral lights.** Zeit. f. Augenh., 1928, v. 66, Dec., p. 425.

After two minutes exposure to a bright light of varying color projected on to a screen by an arc lamp through a liquid filter, the course of a number of subjects' dark adaptation was measured. It was arranged that the colored light was of equal intensity in all cases. It was found that

(1) dark adaptation after light adaptation to varying spectral light of equal intensity did not follow the same course.

(2) after light adaptation to light of long waves it took a smaller stimulus to produce sensation than after exposure to light of short waves.

(3) sensitivity rose more rapidly during dark adaptation after previous exposure of short waves than long, and after forty-two minutes the end results were independent of the wave length of previous exposure. These results support the contention of Hess

that the cones of the retina also take part in the process of adapation.

F. H. Haessler.

Gjessing, H. G. A. **Comparison of methods of refraction.** Norsk Mag. for Laegevid, 1928, v. 89, pp. 1087-1098. See abstract, Amer. Jour. Ophth., 1929, April, p. 388, and editorial, 1929, March, p. 227.

4. OCULAR MOVEMENTS

Brunner, Hans. **The clinical significance of spontaneous nystagmus.** Arch. of Ottal., 1929, v. 9, Jan., pp. 1-11.

This paper, written from the otologist's point of view, discusses the significance of spontaneous nystagmus as it applies to the labyrinth, the eyes, and the brain. Ten case reports with differential diagnosis are given. The author concludes that from spontaneous nystagmus alone one is often enabled to draw important conclusions as to the diagnosis, course, and treatment of a disease.

Ralph W. Danielson.

Onfray, René. **Note on the classification of convergent strabismus.** Bull. Soc. Franç. d'Opht., 1928, p. 359.

Onfray divides convergent strabismus into four groups. The first group includes the cases of hypermetropia, with anisometropia more or less marked, in which the visual acuity of the two eyes is improvable by lenses, and which are susceptible to cure with establishment of binocular vision. The second group includes those cases in which the ocular deviation is accompanied by unilateral amblyopia and in which frequently there is a central scotoma of the amblyopic eye. A cosmetic cure is the best that can be hoped for in this type. The third group is composed of those cases in which the motility of one of the eyes is more or less impaired and which can be cured by reinforcement of the abductors. The fourth group consists of cases of alternating strabismus in which the refractive error is often slight and in which the two eyes have equal acuity, but in which binocular vision is impossible due to a cerebral lesion in the centers of association and of binocular motor coordination.

Phillips Thygeson.

5. CONJUNCTIVA

Birnbaum, H. **Treatment of conjunctivitis by targesine.** Ann. d'Ocul., 1929, Feb., v. 166, pp. 131-136.

The author has found this preparation of silver and tannin to be very efficacious both in acute and chronic conjunctivitis. It has an excellent penetration and bacterial effect, without the liberation of many silver ions which have a tendency to be irritating.

Lawrence Post.

Blatt, Nikolaus. **Unilateral trachoma.** Klin. M. f. Augenh., 1928, v. 81, Dec., p. 810-822.

Meyerhof found one per cent, Nagel six per cent, Rötth 4 per cent, and Blatt in Siebenbürgen 3.95 per cent of unilateral trachoma. In this relationship the social and hygienic conditions are of great influence. Unilaterality is favored by good social and hygienic surroundings, by very early rational therapy, by acute or subacute types with violent inflammation (whereby the defensive reaction is sooner and more intensely elicited, producing diminished virulence of the morbid agent), by normal constitution, and by normal condition of the lacrimal duct and nose.

C. Zimmermann.

Brana, Johann. **Degenerative stigmata of trachomatous patients.** Arch. di Ottal., 1928., v. 35, March, p. 112.

The author believes that definite degenerative somatic stigmata, such as neuropathic phenomena, dental anomalies, etc., accompany the congenital constitutional lymphatism observed in trachomatous patients. He gives a list of various authors confirming his opinion that the trachomatous patients present characters of inferiority in the biological sense.

D. Alperin.

Drosdova, M. V. and Petrova, F. A. **Dysentery bacillus in eye pathology.** Russkii Opht. Jour., 1929, Feb., pp. 204-208.

Following contamination of the patient's eye with dysenteric feces an acute conjunctivitis with considerable edema of the eyelids and with a mucopurulent discharge developed. This was complicated by a corneal lesion which rapidly progressed from small vesicles on the corneal surface to a deep ulceration. The usual treatment —antiseptics, irrigation, atropin, cauterization of the ulcer, and so on— failed to bring about an improvement. Neither did this therapy influence the microflora of the conjunctiva, from which a pure culture of dysentery bacillus had been isolated three times during this period. Local immunization was then resorted to, and instillation of antidysenteric serum was promptly followed by disappearance of the dysentery bacilli from the conjunctival discharge, and by a favorable turn in the course of the corneal ulceration. *M. Beigelman.*

Kanda, K. and Takizawa, T. **Some epidemiological factors of trachoma infection, especially the water supplies, among the inhabitants of the city of Takao.** Jour. Med. Assoc. of Formosa, 1928, no. 277, April 28. Reprint in Japanese; summary in English.

In the elementary schools of Takao twenty-four per cent of the Japanese and sixty-eight per cent of the Formosan Chinese are affected with trachoma. The average number of members in a family is 3.5 for the Japanese and 4.8 for the Chinese. Eighty-four per cent of the Japanese homes are supplied by pure water while ninety-five per cent of the Chinese homes are served by unsanitary, shallow wells. The authors believe there is an etiological relationship between these facts. (6 photographs)

Ralph W. Danielson.

Merkulow. **Roentengenotherapy of granulosis.** Zeit. f. Augenh., 1928, v. 66, Dec., p. 441.

Fourteen cases of granulosis are reported, the patients varying in age from six to thirty-four years. Details of roentgen technique are given. In no case were there corneal complications. The disease existed for a few months to three years. In the beginning of the treatment no changes were noted, but by the end of the second and third weeks all the patients felt greatly improved. After three months of radiation they almost always obtained a smooth conjunctiva and disappearance of follicles and of exudation. Many of the patients did not return to the clinic after completing the course of treatment, but those that did were striking evidence as to the efficacy of the method.

F. H. Haessler.

Mikaeljan, R. C., Kruglow, A. N., and Tarnopolsky, I. J. **The relations between constitution and trachoma.** Klin. M. f. Augenh., 1928, v. 81, Dec., p. 822-829.

From their examinations of 125 patients of the trachoma institute at Kasan, the authors conclude that among adults infected with trachoma at a more mature age, chiefly types of normal constitution (120 out of 125 cases) occur and most frequently the respiratory (asthenic) type. Anomalies of constitution were rarely observed. There were only eight cases of remnants of adenoid involution. Stigmata of degeneration and coincidence of trachoma with lues, tuberculosis, and rachitis were rare in this series of patients. So far no generalizing conclusions are drawn.

C. Zimmermann.

Pellegrini, Mario. **Subconjunctival injections of tracolysin in keratitis.** Arch. di Ottal., 1928, v. 35, July, p. 296.

Tracolysin is given subconjunctivally in the Angelucci clinic, as a treatment in all inflammatory corneal affections. The formula of tracolysin includes sodium chloride, sodium sulphate, sodium nucleinate, novocaine, and carbolic acid. (The amounts are

not very clearly stated.) The injection is given in any part of the bulbar conjunctiva. No conjunctival scar is produced. The treatment is used extensively for trachoma. *D. Alperin.*

Rossi, V. **Pretrachoma.** Arch. di Ottal., 1928, v. 35, May, p. 193.

The author regards the patient as a biotype, and the disease as an organic state with characteristic findings forming the "trachoma complex." He finds an eosinophilia accompanying the lymphatism and vagotonia of the trachoma patient. *D. Alperin.*

Sattler, C. H. **Conjunctival hemorrhage, difficult to control, in a newborn.** Klin. M. f. Augenh., 1929, v. 82, Jan., pp. 84-85.

Sattler was called by a pediatrician to a new-born boy of three days on account of a continued conjunctival hemorrhage after normal birth. A small granulation at the upper lid border bled after being wiped off, and also a small place at the margin of the lower lid, exactly opposite the first. Treatment, including hypodermic injection of clauden (a protein preparation), was of no avail until on the fifth day an intramuscular injection of ten c.c. of the father's blood stopped the hemorrhage within a few minutes. There was no relapse. The examination of the blood and the coagulation time did not show hemophilia. For explanation of the cause Sattler assumes that the lids were still adherent at birth and were torn asunder in opening the eyes, leaving the bleeding spots exactly opposite one another. *C. Zimmermann.*

Seka, Wolfgang A. **The trachoma focus in the oasis Choresma (Chiwa).** Klin. M. f. Augenh., 1928, v. 81, Dec., p. 802. This is a contribution to the social pathology of trachoma, based on observation and treatment of 1109 cases in 1926 and 834 cases in 1927, in the dispensary and eye department of the hospital at Chiwa. According to the preponderance of granular infiltration or cicatricial restitutive process, two forms of trachoma are distinguished, granular progressive and cicatricial regressive trachoma. Ninety-eight per cent of the population is illiterate, and the treatment of trachoma lies only to a small degree in medical hands. Hence there is no regulated treatment of trachoma, and on account of the apathy of the people and the impossibility of daily medical attention (due to the lack of means of transportation), trachoma is almost ineradicable. *C. Zimmermann.*

Sgrosso, Salvatore. **Trachoma, follicular conjunctivitis, tuberculosis of the conjunctiva.** Arch. di Ottal., 1928, v. 35, May, p. 200.

The article is a continuation of a report on the symbiotic relations existing between the parenchymatous and stroma elements, and shows that the epithelial cell is the only tissue element capable of living independent of connective tissue. It also contains reference to the Ribbert modification of the Durante-Cohnheim theory on the etiology of tumors. *D. Alperin.*

Slutzkin, L. **Autohemotherapy in trachoma.** Klin. M. f. Augenh., 1928, v. 81, Dec., pp. 829-835.

After a review of the literature on autohemotherapy in ophthalmology, the author relates his experiences with it in fifty-six stationary trachoma patients in the eye hospital of Baku. Five or six injections of from five to eight c.c. of the patient's blood were made into the gluteal region. The conclusions are: Autohemotherapy stimulates the success of the usual local treatment. It rapidly removes the irritation and, with the usual therapy, promotes absorption of corneal infiltrations and cicatrization of ulcers, clears up pannus, and shortens the duration of the trachoma process. It can be used in ambulant practice with good results. Without local therapy it yields doubtful results.

C. Zimmermann.

6. CORNEA AND SCLERA

Brückner, Zaboj. **Immunity of the eye.** Ann. d'Ocul., 1929, Feb., v. 166, pp. 106-130.

Exhaustive studies were made to determine the influence of ocular hypotension on the quantity of hemolysins in the cornea especially, and also in the aqueous and vitreous, in normal and immune rabbits. The cornea was found to participate in the general immunity much more than the aqueous and the latter more than the vitreous. The hemolysins in the cornea are greatly increased by hypotony of the eye, whether this is produced by corneal or by scleral puncture. The regression of serpiginous ulcer after tapping of the cornea is held to be due to the hypotony produced.

Lawrence Post.

Denig, Rudolf. **Circumcorneal transplantation of buccal mucous membrane as a curative measure in diseases of the eye.** Arch. of Ophth., 1929, v. 1, March, pp. 351-357.

The author refers to his earlier paper published in 1911, in which he first recommended circumcorneal transplantation of mucous membrane from the mouth as a curative measure in diseases of the eye. He removes the conjunctiva with the subconjunctival tissue all along the limbus of the cornea, taking great care to lay the sclerotic entirely bare. The width of the excision should be from six to eight mm. If the conjunctiva is scanty in amount due to scars of operation, burns, or otherwise, it may be best not to excise any of the conjunctiva, but simply to remove it from its corneal attachment and then undermine it sufficiently so that the flap of mucous membrane may be slid under it and secured by a few sutures. The mucous membrane is taken from the lower lip or the inside of the mouth and should be of such size as to be placed on slight tension when secured in place on the sclera. Fat and blood vessels, but not connective tissue, should be removed if this is to be done for the relief of pannus. If a complete pericorneal transplantation is to be made, two grafts should be used, one for the upper, the second for the lower. Both eyes should be done at once, if both are involved. The inner edge of the graft should touch but not cover the cornea. Both eyes are bandaged for fully five days. The sutures are removed on the tenth or twelfth day. This procedure has been found of value in pannus, torpid and dystrophic processes of the cornea, herpes, and burns. In cases of trachomatous pannus, the graft should not be placed until the acute process is over. It is especially valuable in old, inactive cases with heavy pannus formation. It has also been valuable in keratitis from acne rosacea. The author's principal use of this corneal grafting has been in cases of lime burns of the eye and a few ammonia burns.

M. H. Post.

Löwenstein, Arnold. **The clinical picture of anaphylactic ophthalmia, with remarks on the pathogenesis of parenchymatous keratitis.** Klin. M. f. Augenh., 1929, v. 82, Jan., pp. 64-71. (1 ill.)

During severe chronic trachoma with pannus, Löwenstein observed acute parenchymatous inflammations of the cornea which did not correspond to any of the known types of keratitis. He called this anaphylactic keratitis. It was characterized by acutely developing, dark-red discoloration of the eyeball, smoky opacity of the parenchyma, hypotony, severe pain, rapid subsidence of the inflammatory symptoms which left numerous opaque spots in the clear portions of the cornea, and frequent relapses. Further observations suggested that the inflammation of the ocular tissues depended on varying stages of hypersensitiveness. Repeated absorption of foreign tissue or of the patient's own disintegrated tissue leads to hypersensitiveness. In connection with these questions an improvement in partial keratoplasty is described and the previously published conception of the pathogenesis of parenchymatous keratitis from congenital lues is defended, viz. embolic or inflammatory obstruction of the anterior ciliary blood vessels, disturbance of nutrition (analog-

ous to the tuberculous process of sclerosing keratitis), and antigenic absorption of damaged corneal tissue.
C. Zimmermann.

Meyer, H. **Dystrophia adiposa corneæ (primary corneal xanthomatosis).** Kin. M. f. Augenh., 1928, v. 81, Dec., pp. 786-793. (1 col. pl. and 1 table.)

A woman aged sixty-five years had had extensive dense opacity of the center of the right cornea eight years previously, on account of which optical iridectomy was performed. Now she came with a much more intense affection of the left cornea. It was the only place in the body in which intra vitam the needle-like crystals of cholesterin ester could be observed. The blood serum showed a slightly milky opacity of high lipoid content. The clinical appearance and the histological examination of a small excised piece are described in detail. The adipose foci developed very slowly, and on the right eye showed involution probably due to neoformation of blood-vessels. The affection was a degenerative fat infiltration, and the involvement of symmetrical parts of both corneas was symptomatic of dystrophy of the cornea from endogenous causes.
C. Zimmermann.

Minder, Fritz. **Leprous affection of the corneal nerves, visible with the slit-lamp.** Klin. M. f. Augenh., 1929, v. 82, Jan., pp. 36-39. (3 ill.)

A man aged twenty-one years had acquired in Argentina leprosy of the left leg which spread in spots and tuberous efflorescences all over the body. While in the hospital at Bern he complained of burning and pain in the left eye, which showed ciliary and episcleritic irritation. The cornea appeared normal, but with the slit-lamp very fine infiltrations surrounding corneal nerves were observed. At one place the nerve showed from five to six small punctiform thickenings shining like pearls, and two fusiform opacities. The sensibility was normal. Under warm applications and atropin the irritation subsided. The patient was treated with chaulmoogra oil.
C. Zimmermann.

Schulte, Wilhelm. **Striate disease of the corneal epithelium.** Klin. M. f. Augenh., 1929, v. 82, Jan., pp., 49-53. (10 col. pl. 1 ill.)

Two cases of the striate disturbance of the corneal epithelium first described by Szily in 1913 and 1918 are reported. Patients affected with it complain of violent pain in the eyes, especially with ocular movement, and also of photophobia and lacrimation, and feeling as of a foreign body. At first glance the cornea seems smooth, and there may be only slight injection of a sector of the ocular conjunctiva. The corneal microscope, however, reveals a typical picture: delicate grey lines, partly intersecting, in which single dots are distinguishable. After instillation of fluorescein there are visible numerous partly parallel partly intersecting straight or curved lines mingled with fine dots. The rapid change, often after a few hours, of these formations, their increase or decrease, and altered direction are characteristic. After longer duration they may lead to erosions, and frequently simultaneous filamentous keratitis was observed. The etiology is not certain, but the great similarity between the arrangement of the streaks and the course of the basal and intraepithelial nerve plexuses of the cornea suggests a neurogenous cause, perhaps a manifestation of the morbid agent of herpes. The best treatment is abrasion of the diseased epithelium.
C. Zimmermann.

Thiel, R. **Benign metastatic furuncular staphylococcic episcleritis.** Klin. M. f. Augenh., 1929, v. 82, Jan., pp. 78-84. (3 ill.)

The clinical histories of four cases are given, all showing a typical aspect, characterized by localized inflammation of the episclera in the area of the anterior ciliary vessels. The affection occurred as metastasis of a general infection in from three to six weeks after the primary symptoms.

Near the limbus the conjunctiva and subconjunctiva formed a glassy edematous cushion, raised by a yellow pus focus in the episcleral tissue. Incision cured the affection in a few days. The primary focus was found in three of the cases. In each case bacteriological examination revealed staphylococcus aureus in the abscess, and in one case also in the blood. In this case the patient appeared several times to be completely cured, but fresh metastases constantly occurred, finally leading to death.

C. Zimmermann.

Thiel, R. **Traumatic keratitis as industrial injury in sugar factories.** Klin. M. f. Augenh., 1928, v. 81, Dec., pp. 835-838.

Three laborers had been occupied in washing sugar beets in waste water. They suddenly noticed burning and lacrimation of both eyes, while there was an irritating odor which reminded them of horse radish. The affection consisted in vesicular detachment and defects of the corneal epithelium within the palpebral fissure. Under dionin and heat the symptoms disappeared after three days without permanent damage. Although sulphuretted hyrogen could not afterward be proved in the material worked upon, it is very probable that it must be regarded as the etiological element. In former similar observations no ocular affection was noticed when fresh water was used for washing the beets.

C. Zimmermann.

Zirm, E. **Further communications on external anterior sclerotomy in glaucoma.** Klin. M. f. Augenh., 1929, v. 82, Jan., pp. 93-96.

After formation of a conjunctival flap, Zirm incises the sclera close to the limbus, vertically to the eyeball, makes several parallel incisions into the external layers of the sclera, deepens the first incision until it perforates the sclera, enlarges this incision at both ends, makes a large iridectomy, and inserts two or three sutures in the conjunctival flap. Two per cent novocaine-suprarenin is previously injected subconjunctivally. He has used this method since 1925 in all cases of glaucoma, with very satisfactory results, and he recommends it highly, except in glaucoma simplex.

C. Zimmermann.

7. UVEAL TRACT, SYMPATHETIC DISEASE, AND AQUEOUS HUMOR

Dejean, C. **Pseudoossification of the vitreous and proliferating osteogenic cyclochoroiditis.** Bull. Soc. Franç. d'Opht., 1928, p. 218.

Dejean reports two cases of pseudoossification of the vitreous, in each of which the vitreous was entirely replaced by new-formed bony structures. Careful microscopic study of sections showed the bone to have originated from uveal connective tissue elements which had invaded and replaced the vitreous as a result of chronic uveal inflammation. The author calls attention to the gross inaccuracy of the terms "ossification of the vitreous body, lens, or retina", and reminds us that bone develops only from connective tissue elements, not found in any of the three structures named. Very careful examination may be necessary to establish the uveal basis of the bone formation, but the presence of disseminated pigment granules is always a good indication.

Phillips Thygeson.

Frisch, A. V., and Pillat, A. **The tuberculous origin of iridocyclitis and the etiology of iridocyclitis of unknown origin.** Graefe's Arch., 1929, v. 121, p. 504.

The intracutaneous reaction for tuberculosis shows better and more safely than any other tuberculin test the allergic condition of the organism as a whole, and indicates the first therapeutic dose of tuberculin to be used. It is an important test in determining the cause of an iridocyclitis, particularly for the practising physician. Upon the basis of a positive intracutaneous reaction, of the general condition, and of the very frequently increased speed of settling of the red blood cor-

puscles, the author feels he is justified in assuming tuberculosis to be the cause in a large proportion of cases of chronic recurring iridocyclitis, in spite of the absence of typical tuberculous nodules. This is particularly true when there has previously been present a probable tuberculous disorder like chronic eczematous keratoconjunctivitis, scleritis, choroiditis, retrobulbar neuritis, papillitis, or retinal periphlebitis.

Tuberculosis may also produce the picture of an actue diffuse iridocyclitis (serous iritis of Fuchs) following after a short or long interval a chronic recurring iridocyclitis. After the first attack the acute diffuse iridocyclitis may heal with complete restoration of the anterior part of the eye. The majority of the so-called rheumatic iridocyclitides belong in this group.

The speed of settling of the red corpuscles is increased in about fifty per cent of the cases of nodular iritis. This indicates an active process in the body, with increased cell destruction. As to the diagnosis, the rate of precipitation of red blood corpuscles is not definitely valuable in differentiating a tuberculous iridocyclitis from an iridocyclitis of other origin. The cases with a normal rate of settling of the red corpuscles appear to have a better prognosis. *H. D. Lamb.*

Niitani, Jitsuo. **Experimental observations on the innervation of the pupil.** Graefe's Arch., 1929, v. 121, p. 471.

It was found that after extirpation of the ciliary ganglion in thirty-one dogs the pupil of the affected side dilated from a previous diameter of 3 to 5.5 mm. to a diameter of 8.5 to 12 mm. and lost its reaction to light. If now 0.5 per cent eserin was instilled,, at first no change was produced in the pupil, because the nerve endings could no longer be affected because of the absence of the ciliary ganglion. After sixteen to seventy-six days, however, the eserin did produce some constriction of the pupil, because the muscle through exhaustion became sufficiently sensitive for the eserin to act directly upon the muscle itself. This reappearing action of eserin lasted a long time; in one case it remained over a year.

After extirpation of the ciliary ganglion one per cent pilocarpin produced in eleven dogs a pronounced and persistent narrowing of the dilated pupil. This action reached its maximum in thirty to forty-five minutes after instillation of the pilocarpin.

Homatropin one per cent caused 0.5 to 1.5 mm. larger diameter of the pupil after extirpation of the ciliary ganglion than resulted from the extirpation alone.

In three dogs in which the ciliary ganglion had been removed, a slight constriction of the pupil (about 0.5 to 1 mm.) was observed after instillation of adrenalin. *H. D. Lamb.*

Poos, F., and Santori, G. **The action on the pupil and accommodation of the autonomous nerve poisons in paralysis of the sympathetic mechanism.** Graefe's Arch., 1929, v. 121, p. 443.

The authors' experiments upon rabbits show a changed action of the autonomous nerve-poisons like cocaine, adrenalin, and atropin upon the action of the pupil and accommodation after paralysis of the sympathetic. This altered reaction was brought about by two factors: (1) by the rapid and increased passage of these drugs into the eye as a result of the sympathetic paralysis causing an increased blood-aqueous humor exchange, and (2) by functional failure of the sympathetic innervation of the smooth muscular apparatus of the eye, which led to a disturbance of the motor function of the pupillary mechanism.

From comparative curves of the size of the pupil as between right and left sides, it was found that the reaction of the iris occurred earlier, progressed faster, and lasted longer on the side of paralysis of the sympathetic.

No maximal mydriasis was produced by the group of observed mydriatics in spite of increased resorp-

tion following paresis of the sympathetic. This was due to the motor functional disturbance in the nerve-muscle organ.

The representative of the atropin group paralysing the parasympathetic might fail to increase the anisocoria because the necessary spontaneous sympathetic impulse for the sphincter and dilator was absent. Stimulators of the sympathetic attacking the sympathetic nerve endings, namely cocaine and ephedrin, produced after degeneration a slight although long continuing mydriasis in spite of their higher concentration in the aqueous humor. On the other hand, in rabbits adrenalin and ergotamin acting directly on the muscle produced an effect corresponding to their increased concentration in the aqueous humor.

These findings also explain the previously published observation that in paralysis of the sympathetic the paralyzing action of adrenalin upon accommodation is increased, while that from cocaine is diminished.

H. D. Lamb.

Waardenburg, P. J. **Question of sex differences in the incidence of congenital iris coloboma.** Klin. M. f. Augenh., 1928, v. 81, Dec., p. 841-843.

Referring to Halbertsma's statement (Klin. M. f. Augenh., 1928, June) that bilateral coloboma of the iris was observed only in the female members of a family, probably due to a germ defect in the x-chromosome. Waardenburg found this in eleven male and thirteen female patients and he believes that so far there is no reason to assume a basic difference of the sexes as to inheritance of coloboma.

C. Zimmermann.

Wiegmann, E. **Case of sympathetic ophthalmia.** Klin. M. f. Augenh., 1928, v. 81, Dec., pp. 853-855.

By explosion of a bottle filled with acetylene and water, the right eye of a boy aged twelve years sustained a linear cut of the cornea, five millimeters long, slightly encroaching on the limbus, with iris prolapse. Under prophylactic inunction a week later the globe was pale, but the optic disc was reddened. Six weeks later there was slight inflammation of both eyes, and the disc of the injured eye was still redder. The patient did not stay at the clinic, but after a few days returned with papilloretinitis of both eyes and impaired sight. In both eyes were yellowish choroiditic foci. After daily intramuscular injections of urotropin the fundi cleared up a little. This treatment was continued for a week, and then intravenous injections of atophanyl for two weeks were added. Recovery ensued. Vision R. 8/7.5, L. 8/8. Characteristic was the slight irritation of the injured eye which occurred after subsidence of mydriasis. Distintegration and absorption of uveal tissue could hardly have occurred from anaphylaxis, and the success of treatment speaks more for a microbic theory.

C. Zimmermann.

8. GLAUCOMA AND OCULAR TENSION

Abadie, C. **The results of medical treatment of glaucoma after one year's application.** Bull. Soc. Franç. d'Opht., 1928, p. 335.

Abadie states that the medical treatment of glaucoma has been successful in the acute and subacute cases as well as in the chronic ones, and that it has even given good results in two severe cases of hemorrhagic glaucoma. His treatment consists of adrenalin 1-1000 (10 to 12 minims t.i.d.), pilocarpin (instilled b.i.d.), and ergotin with calcium chloride by mouth. Unfortunately Abadie does not cite any case reports or accurate data as to tension and visual fields, and this lack makes the paper rather unconvincing.

Phillips Thygeson.

Bailliart, P. **New remarks on imbibition by the eyeball.** Bull. Soc. Franç. d'Opht., 1928, p. 322.

The new conceptions of the pathogenesis of glaucoma are concerned with the physicochemical modifications

of the blood and aqueous humor, osmotic phenomena, and the colloidal state of the vitreous. The modification of the vitreous as a result of imbibition is probably the most important factor in changes of ocular tonus. Bailliart, in an experimental study of animal and freshly enucleated human eyes, concludes (1) that the enucleated glaucomatous eye is very susceptible to imbibition; (2) that drop in weight and drop in tension in an enucleated eye exposed to the air run a parallel course; (3) that when the eye is plunged into distilled water the increase in tension and that in weight occur simultaneously; (4) that the penetration of water into the globe occurs by way of the cornea and limbus; and (5) that when the enucleated eye is plunged into a hypertonic solution the weight and tension both drop.

Age seems to play a rôle in that enucleated eyes of older people show more imbibition than those of younger ones. Intracarotid injections of acid solutions in dogs caused marked rise in tension. Apparently both living and enucleated eyes react in the same manner and modify the imbibition according to the same rules. Bailliart obtained a considerable and lasting fall of tension in certain cases of glaucoma after prolonged bathing of the cornea with hypertonic serum. In one of the cases the cornea became infiltrated in the same way as the cornea of an enucleated eye immersed in hypertonic solution, having the appearance of interstitial keratitis.

Phillips Thygeson.

Lindner, Karl. **The diagnosis and treatment of glaucoma.** Wiener klin. Woch., 1928, v. 41, Aug., p. 1265.

Lindner reviews the diagnosis and treatment of glaucoma, acute, chronic, and secondary. The use of pilocarpin and eserin is emphasized, with the perimeter and tonometer as guides to the time of operative interference. Adrenalin and its derivatives are mentioned, but no specific directions given.

B. Cushman.

Rehsteiner, Carl. **Contribution to capsulocuticular glaucoma** (glaucoma with membrane on anterior capsule). Klin. M. f. Augenh., 1929, v. 82, Jan., pp. 21-36. (6 col. pl., 1 table, 1 ill.)

Vogt described light blue flocculi of felt-like appearance on the pupillary pigment fringe of the iris, and peculiar membranes on the anterior surface of the lens, with glaucoma in seventy-six per cent of his cases. Rehsteiner adds seventeen new cases, with clinical histories and histological examinations (the latter illustrated on three color plates), with glaucoma in seventy per cent. Out of 238 systematically examined inmates over sixty years old of homes for the aged, four showed the membranes, and three of these were glaucomatous. The membranes are regarded by Vogt as due to desquamation of the superficial lamellæ of the lens capsule. Glaucoma is not the cause but the consequence of the membrane formation, according to Vogt. The assumption that the alterations at the lens capsule are primary, and that detached parts of the lamellæ may in some cases obstruct the outflow from the anterior chamber, explains why in a part of the cases glaucoma was not observed.

C. Zimmermann.

Rosenthal, Hans. **Natural communication of the anterior chamber with the subconjunctival tissue, and intense ocular hypotony.** Klin. M. f. Augenh., 1929, v. 82, Jan., pp. 88-90. (1 ill.)

A boy aged seventeen years presented bulging of the conjunctiva at the nasal side, with two dark points which seemed to be little canals entering the sclera. Upon pressure on the hypotonic eyeball the tumor bulged more, and after instillation of fluorescein its summit showed a green spot which rapidly extended downward, so that there was undoubtedly a communication between subconjunctival tissue and anterior chamber. As the history revealed no traumatism, the author assumed the existence of preformed gaps, which in the course of years had become nonectatic. The

fact that the eye tolerated such hypotony without the least functional disturbance must be due to the elasticity of the youthful tissue, but with advancing age and the subsequent rigidity of the tissues severe lesions of the visual organ must be expected from such a condition. The patient will remain under observation, and in the event of impairment of vision the little canals may be obliterated with the thermocautery and a plastic operation done to prevent serious damages.

C. Zimmermann.

9. CRYSTALLINE LENS

Cattaneo, D. **Contribution to zonular lamella.** Klin. M. f. Augenh., 1929, v. 82, Jan., pp. 71-77. (1 ill.)

The right eye of a man aged forty-two years showed a dislocation of the lens toward the nasal side, so that in atropin mydriasis the temporal equatorial margin appeared smooth and without zonular fibers. With the slit-lamp a fine grey, almost transparent, waxy membrane was seen under the border of the iris, which most likely was the zonular lamella, as between this and the temporal margin of the lens no trace of zonula of Zinn was found. In a man aged twenty-eight years with bilateral aniridia and congenital ectopia of the lens a fine thin wavy membrane which the author regarded as zonular lamella was seen hanging on the detached zonular fibers.

C. Zimmermann.

De Saint-Martin. **Adrenalin mydriasis in cataract extraction.** Bull. Franç. d'Opht., 1928, p. 196.

Two drops of a 1 to 1000 solution of adrenalin, injected subconjunctivally near the limbus, produces a rapid mydriasis, attaining in ten to fifteen minutes a submaximal dilatation, lasting from four to six hours. The mydriasis is not lost with the opening of the anterior chamber. The advantages of this method in cataract extraction are numerous. The large pupil facilitates total extraction by removing the resistance of the sphincter. Evacuation of cortex is facilitated, and, if the lens becomes luxated during the operation, introduction of the loop is easier. Among the disadvantages are the danger of injuring the iris in making the corneal section, the difficulty in making peripheral iridectomy because of the dilated iris, the favoring of vitreous loss, and the persistence of mydriasis with possible iris prolapse. Finally, after adrenalin injection, the aqueous humor regenerates without albumin and can not produce the fibrin with which the corneal wound is ordinarily sealed. The author feels that these objections are more theoretical than real, and he reports fifty cases operated upon according to this technique in which there was vitreous loss in only four cases and iris prolapse in one.

Phillips Thygeson.

Dieter, W. **Extraction of dislocated lenses.** Klin. M. f. Augenh., 1928, v. 81, Aug.-Sept., pp. 299-303. (7 ill.)

Under ciliary ganglion anesthesia a bridle suture is placed in the tendon of the superior rectus, the pupil dilated ad maximum by homatropin and cocaine, and a discission needle with a strong broad and slightly curved point introduced eight millimeters from the temporal limbus behind the lens in order to bring this into the anterior chamber. After complete miosis by histamin, to avoid prolapse of iris and vitreous, the lens is extracted with a hook. In all his cases the author had no loss of vitreous.

C. Zimmermann.

Gifford, S. R., Bennett, A. E., and Fairchild, N. M. **Cataract in myotonic dystrophy.** Arch. of Ophth., 1929, v. 1, March, pp. 335-345.

Myotonic dystrophy was first recognized in 1890. It is characterized by an excessive contractility and a lessened relaxation of muscle. Patients are hollow-cheeked, due to atrophy in the muscles of the face and the sternocleidomastoid group with those of the forearm and also the peronei. Cataract, gonadal atrophy and sterility, baldness, and general loss of weight are constantly present. There

is also a familial tendency. The onset occurs between twenty and thirty, and death follows due to secondary diseases as a rule before forty-five years. The inability to relax is greatest when the patient is cold or under emotional strain. Occasionally, the jaws become set in chewing. Mental changes are usually present. The etiology is unknown. The characteristic picture in the muscle consists of long chains of sarcolemma nuclei in the muscle fibers, which vary considerably in size. Cataract occurs in about ten per cent of all cases, and in cases of presenile cataract the possibility of the presence of this condition should not be overlooked. The typical slit-lamp picture of these cataracts, as described by Fleischer, shows a star-shaped opacity in the posterior cortex, with punctate opacities in all layers of the lens, but chiefly in the cortex. Four cases are reported. Vogt describes these cataracts as being characterized by the occurrence of punctate and dust-like opacities with larger flakes giving the play of colors, "sharply localized in a thin zone of cortex just under the anterior and posterior capsules". The authors believe Vogt's picture to be that of the early stage and the star-shaped picture seen by Fleischer to be due to increasing opacification of lens fibers along the suture lines. The localization of opacities close to the capsule is suggestive of its origin at a time in life following the onset of the general disease. *M. H. Post.*

Goldmann, H., and Rabinowitz, G. **An unknown reversible type of cataract in young rats.** Klin. M. f. Augenh,. 1928, v. 81, Dec., p. 771.

The authors describe in detail their interesting experiments and examinations with the slit-lamp in homatropin mydriasis; and they report the following results: In normal young rats of seventy grammes weight, whose eyes were held open for a certain time, opacities regularly occurred in the area of the anterior part of the lens not covered by the iris. These opacities, while the surface cleared, gradually extended into the cortex and afterwards disappeared. As cause of these opacities is suggested an increase in concentration of the aqueous due to evaporation on the surface of the cornea. Was the increased concentration due to reception of ions from outside or to absorption of water from the aqueous? *C. Zimmermann.*

Hanssen, R. **The question of nephritic retinitis.** Klin. M. f. Augenh., 1929, v. 82, Jan., pp. 40-48. (5 ill.)

Hanssen discusses the opinions of recent authors who attribute nephritic retinitis to primary disturbances of circulation, e.g. ischemia, and states arguments to show that this view is untenable, and that the affection is essentially a toxic inflammatory one, although he does not deny the synchronous importance of functional or anatomical vascular disorders in single cases. In reexamining about fifty-five cases histologically, he found the changes in the retinal vessels strikingly slight in comparison with the other alterations, especially the vascular changes in the choroid. Typical examples of alterations in the choroid are illustrated. The details include accumulation of lymphocytes, perivasculitis and endovasculitis, sclerosis of the vessels, foci of transudation and of exudation, proliferation of the pigment epithelium, and granulomas. *C. Zimmermann.*

Kienecker, Rudolf. **A case of bilateral lentiglobus anterior.** Klin. M. f. Augenh., 1929, v. 82, Jan., pp. 55-64. (3 ill.)

The literature contains only nine cases of this rare affection, not thirty per cent as many as of posterior lenticonus, which is also rare. A man aged forty-two years, suffering from granular atrophy of the kidneys with vascular hypertony, complained of impaired vision, which he attributed to the renal affection. At the anterior pole of each lens a regular spherical segment of lens substance projected two millimeters into the anterior

chamber, like a dew drop, from three to four millimeters in diameter at its base. Skiascopy showed in this area —20.00 diopters, and at the periphery emmetropria. With the ophthalmoscope at fifty centimeters distance one saw a clear, very much enlarged image of the disc and of the retinal vessels, which after a short course appeared concentrically cut off at the margin of the formation. Vision was not improved by glasses.

In all reported cases the bulging was partial and bilateral. Differing from lenticonus posterior, lentiglobus anterior has not been shown to be a congenital malformation, but seems to occur at advanced age. So far only theoretical speculations on its essential character and etiology have been advanced. These are discussed. The occurrence of albuminuria in some cases suggests that a part is played by disturbance of aqueous control and consequent swelling of the lens cortex in connection with accommodation, in analogy with the experiments of Hess and Pflugk on cormorants and turtles.

C. Zimmermann.

Kirby, D. B., Estey, K., and Tabor, F. **Cultivation of lens epithelium in vitro.** Arch. of Ophth., 1929, v. 1, March, pp. 358-365.

In this paper the authors report that they have repeated their former experiments and have verified them. Two hundred and ninety-four explants of lens epithelium were made. Of these fifty-nine per cent survived the first transfer, thirty-eight per cent the second, and nineteen per cent the third. In some of these the epithelium showed a tendency to infold, for the edges to join and miniature transparent crystalline lenses to form. During the seven months a single strain of lens epithelium passed through 112 transfers, demonstrating that the lens epithelium can live in vitro for an indefinite period. The medium was changed every forty-eight hours, except at the week-ends, when it was changed after a shorter period. They found that the average explant increased seven times in size in forty-eight hours. Growth was best in media containing the normal percentage of inorganic salts. Hypertonic solution containing two per cent sodium chloride proved lethal in all cases, while on the other hand dilutions to thirty-five and fifty per cent also proved lethal in all cases. A medium of hydrogen-ion concentration of 8.2 markedly decreased the rate of growth, and many dead and dying cells were found. Many toxic factors were found in the media. Some of these could be demonstrated, others could not, such as the reaction of glassware or the water used in making up the solutions. Certain plasmas proved toxic. If the plasma gave off an odor of ether it usually proved toxic. That of a chicken previously inoculated with Roux's chicken sarcoma virus was also toxic. Attempts were made to produce a serum which would give a marked tissue-specific precipitin reaction and high titer in complement-fixation reaction. The medium, however, proved lethal, not only to the lens epithelium, but to fibroblasts and iris epithelium as well. The authors feel that this experiment should be reproduced, however. Finally, they found that debilitated cultures of lens epithelium might be restored by placing them in normal medium for several passages.

M. H. Post.

Klauber, E. **Foreign bodies in the anterior chamber causing complications after cataract operations.** Klin. M. f. Augenh., 1929, v. 82, Jan., pp. 86-87.

In one case a piece of cotton caused iritic irritations, which disappeared after removal. In the other a lash which had entered the anterior chamber at the operation produced an exudative glaucomatous iritis, which healed after paracentesis without removal of the lash embedded in the iris.

C. Zimmermann.

Siegrist, A. **Pathogenesis of senile cataract.** Klin. M. f. Augenh., 1928, v. 81, Dec., pp. 764-770.

Siegrist considers endocrine disturbances as the most important etiological element in the pathogenesis of senile cataract, and is convinced that a successful medication for senile cataract must start with the introduction of certain hormones into the organism. In thirty-one out of thirty-two cases he observed an arrest of the cataractous process by a combined glandular preparation (thyroid, parathyroid, ovary, and testicle, with calcium lactate), known as euphakin. To avoid disagreeable symptoms the thyroid content was standardized by determination of the iodin content of these tablets. *C. Zimmermann.*

10. RETINA AND VITREOUS

Dubois, Hélène. **Traumatic retinal detachment.** Ann. d'Ocul., 1929, Feb., v. 166, pp. 81-89.

Detachments are divided into active and passive. In the former the passage of fluid behind the retina is secondary; the traction on the retina primary. In the latter the passage of fluid behind the retina is primary and closure of the tear will effect a cure. Traumatic detachments in which rupture takes place at the ora serrata can be regarded as of the type without extensive vitreous bands and so are amenable to treatment, though traumatic cases in general—especially with penetration of large foreign bodies—give distinctly unfavorable prognoses. Three cases are reported.

Lawrence Post.

Fuchs, Adalbert. **A case of hemeralopia with white dots in the fundus and xerosis.** Klin. M. f. Augenh., 1928, v. 81, Dec., pp. 849-850. (2 ill.)

While at the Peking Union Medical College as visiting professor, Fuchs saw a rather robust youth, aged seventeen years, who had suffered for ten months from hemeralopia which had come on suddenly. After a transient improvement his vision gradually decreased to 6/75. The optic nerves were normal, but the fundi were covered with small whitish dots under the vessels. He was given one hundred grams of liver daily and cod liver oil, and after a few days the vision rose to 6/61 and the light sense became normal. The xerosis disappeared, but the fundus changes persisted, so that Fuchs thought that they had nothing to do with the hemeralopia, although the observation of Uyemura that the dots disappeared later on rendered this very probable.

C. Zimmermann.

Goldstein, I., and Wexler, D. **The preretinal artery.** Arch. of Ophth., 1929, v. 1, March, pp. 324-334.

The paper opens with a short review of the literature concerning preretinal arteries in general and notes the occasional presence of preretinal veins also. The authors note that as a rule the arteries arise from and return to other arteries in the disc, but that they occasionally terminate in retinal vessels rather than in the disc. In the authors' case serial sections showed that the vessel originated and terminated with branches of the central artery. There was no membrane or sheath in contact with the vessel. It was supported only by the vitreous, having no elements derived from the retina along with it. It could not be determined whether the hyaloid membrane passed with the vessel into the vitreous, or was ruptured by the vessel in its passage into the vitreous.

M. H. Post.

Holm, Ejler. **Demonstration of vitamin A in retina.** Hospitalstidende, 1929, v. 72, Feb. 7, pp. 139-152.

Hemeralopia is the first and in adults, at least, often the only symptom of a vitamin-A deficiency in the diet. It can be assumed that the changes causing this symptom would lie in the retina itself or less likely in the nerves or brain. In order to determine the presence or absence of vitamin A in these tissues, a series of experiments were made. Rats were used. Different groups were all fed on standard vitamin-A-free diet until eye symptoms (loss of eyelashes, diminished palpebral fissures, brown se-

cretion, keratitis, perforation) and loss of weight appeared. Additions of dried fresh calf's retina, white brain substance, and gray brain substance, respectively, were given. Recovery in eye symptoms was found to take place quickly and with small amounts of retina, but only slowly and with large amounts of brain substance, indicating that calf's retina is rich in vitamin-A. It contains more vitamin-A than butter and likely holds vitamin-A in a greater concentration than any other tissue in mammals.

No attempt was made to determine the layer or layers of the retina which hold this substance. But knowing the affinity which vitamin-A has for fats, it is reasonable to suppose that the lipoids known to exist in the pigment epithelial layer contain this substance. It is also believed that vitamin-A is closely concerned in the physiology of the visual purple.

D. L. Tilderquist.

Knapp, Arnold. **Retinal degeneration in macular region without cerebral symptoms.** Arch. of Ophth., 1929, v. 1, March, pp. 311-314.

Six cases are reported in this paper, which is also accompanied by an excellent color plate. The ophthalmoscopic changes consisted in an area of increased pigmentation at the macula, surrounded by many small greyish spots. These were nonpigmented, lay behind the retinal vessels, and were frequently concentric with the macula. In three cases there was temporal atrophy of the optic nerve. The lesions began in the second decade. The patients were healthy. The disease did not appear to be hereditary, though in case five two uncles had retinitis pigmentosa, and in each of cases two and six a sister and a brother were affected. Consanguinity was not present in the parents. The changes were present in both eyes and the vision varied from 20/40 to 8/200. A central scotoma was regularly present. Hemeralopia was not complained of. Four of these cases have not progressed during observation over a period of two to thirteen years. In the two remaining cases there was slight loss of vision.

In maculocerebral degeneration the disturbance begins at an early age and the cerebral degeneration continues until the patient's death. It differs from retinal degeneration in that retinal pigmentation is absent or is localized to the region of the macula and the posterior pole. The scotoma of retinal degeneration is ring-shaped, while that of the condition under discussion is central. It resembles somewhat Haab's senile macular degeneration. The pathologic processes are unknown. *M. H. Post.*

Litinsky, G. A. **A case of bilateral external exudative retinitis.** Russkii Opht. Jour., 1929, Feb., pp. 190-194.

A bilateral fundus lesion in a young man was diagnosed as Coats's retinitis because of exudative areas in the deep layers of the retina, with elevated subretinal striæ and a peculiar retinal separation, present in both eyes. A general tuberculous status, suggested by x-ray findings and a positive Pirquet, is mentioned as the probable etiologic factor. *M. Beigelman.*

Merkulow, J., and Schick, J. **Attempted roentgen therapy in retinitis pigmentosa.** Klin. M. f. Augenh., 1928, v. 81, Dec., pp. 844-847.

Prompted by the favorable results of Sgrosso, the authors applied roentgen rays in three cases of retinitis pigmentosa and obtained improvement of vision (not of visual field), of dark adaptation and of the fundus changes. Since in retinitis pigmentosa the retinal and choroidal vessels are finally affected, roentgen therapy perhaps acts by the effect of improvement of circulation on the visual cells or their function. That vision alone is affected is explicable from the fact that the cones are relatively longer preserved in this disease than the rods. A trial with roentgen therapy as early as possible seems to be indicated, if only as a palliative.

C. Zimmermann.

Pines, N. **Sclerosis of the retinal vessels.** Brit. Jour. Ophth. 1929, v. 13, March, p. 97.

This well ordered communication is worthy of serious consideration in its original form by all ophthalmologists and other practitioners of medicine. The investigations of other workers in this field are discussed. By means of illustrations many of the author's observations are depicted. In the author's opinion, the vessels of a normal papilla run through a perivascularis which is in itself a very complicated and strong structure. It probably contains lymphatic channels and may be reinforced by neuroglia. The same difficulty which the optic nerve experiences when passing through the lamina cribrosa is experienced by the retinal vessels when passing through the structure of the disc, squeezed, as they are, laterally and sagitally. The veins adapt themselves by becoming narrower than on the retina. The white lines which accompany the vessels on the disc are points where their "perivascularis" meets the tissue of the disc proper, and where the connective tissue is at its maximum. It is probable that these white lines may be more easily seen in the sclerotic eye, which logically is to be expected, but in this case the sclerosis only aggravates a pre-existing condition and therefore makes it more markedly evident—an important principle which lies at the root of many phenomena of retinal vascular sclerosis. Therefore the various vascular changes seen on the disc, such as white lines accompanying the vessels or at their crossings, crushing of the veins by the arteries, deflection of the veins by the arteries, flattening of the veins when crossing the arteries, and the collapse or banking of the veins, although easily explained by mechanical causes, can not be regarded as pathological even in a highly sclerotic fundus, as it is impossible to differentiate them from congenital ones. The author warns against being misled into believing that all wavy vessels are pathological. The presence of "corkscrew" smaller vessels, the compression of veins at crossings, if centrifugally or centripetally deflected, together with perivascularis at the crossings, are all convincing evidence of pathology. There is always some difference between a congenital and pathological deflection, the latter being sharper and more limited.

The influence of systolic and diastolic pressure is significant, particularly in regard to their ratio. Diastolic pressure indicates a continued pressure with permanent damage to the arterial walls. The effect of different toxins on the vascular tree in the production of retinal vessel changes presents attractive problems for consideration. The blood vessel reacts either with atheroma or sclerosis. In the former the endothelium shows pathological thickening, at times almost blocking the lumen, in the latter the chief change is in the muscular coat, or it is a severe hyaline degeneration and thickening of the artery. (Eighteen excellent illustrations.) *D. F. Harbridge.*

Van Lint. **Embolism of a branch of the central retinal artery of the retina after injection of metarsenobenzol.** Bull. Soc. Franç. d'opht., 1928, p. 247.

Van Lint briefly reviews the literature on complications of arsenical therapy and reports a case of embolism of the inferior temporal artery following half an hour after an injection of 75 cgm. of metarsenobenzol. The patient had had malaria the previous year but the author accords the disease only a preparatory action. The rapid appearance of the complication after the injection, the absence of all cardiovascular lesions, the early age of the patient, and the coincidental vascular spasms in the hands and feet all support the causal relationship of the arsenical. Van Lint emphasizes that this should not contraindicate arsenical medication but should stimulate investigation as to the comparative value of the various antiluetic drugs in ocular syphilis.

Phillips Thygeson.

Vogt, Alfred. **Treatment of retinal detachment with ignipuncture of the tear.** Schweiz. med. Woch., 1929, March 23, p. 331.

The author discusses the theory of Gonin, Hansen, and Vogt that spontaneous detachment is preceded by the formation of a rent, a retinal foramen. It is pretty certain that traumatic detachment is produced by such a foramen. The contusion produces a rent, which lies mostly peripherally, because the retina is there thinnest and devoid of supporting nerve fibers. Vitreous fluid trickles through and lifts the retina from the pigment epithelium. After days and weeks the fluid augments, and the end result is total detachment. Systematic study of spontaneous detachments makes it probable that here also rent and foramen formation are the cause. Often the retina surrounding the foramen is ragged and torn into fibrils. Enlargement is favored by the motion of the specifically heavier retina in the vitreous. This heavier specific weight explains the original position upward, and also why detachments in the lower retina are the least dangerous. Two illustrative cases are cited.

Spontaneous detachment is rather a degenerative symptom, and inflammatory changes in Leber's sense need not precede it. External influences often play a part. Vogt demonstrates this with case histories. Heredity plays its part. The question of accident and insurance is discussed. Axial myopia is particularly disposed to detachment. The traumatism which produces the detachment is often apparently without importance. But one can always say that without the trauma the detachment would not have occurred. Cases occur in which no rent is seen; or they are of long standing, often with more or less opaque media, or the rent lies in the extreme periphery. Vogt does not deny the possibility of detachment without rent.

Gonin's use of ignipuncture to close the opening is described. Gonin determines the position of the rent with the ophthalmoscope, makes an opening in the sclera, and goes in with the thermocautery. If he touches the opening or the immediate surroundings the opening will close, the margins of the tear adhere to the cautery scar, and in many cases the detachment is reattached. After citing three successful cases Vogt states that these three cases are already sufficient to regard the method as an unexpectedly valuable one. He has four cases which have remained cured more than a year, with good or very good vision.

E. E. Blaauw.

11. OPTIC NERVE AND TOXIC AMBLYOPIAS

Abramovicz, J. **On pigmentary changes in the optic disc.** Klinika Oczna, 1928, Dec., pp. 226-230.

In two cases an unusual pigmentation of the optic discs was observed. Because the pigmentary spots were located near the retinal bloodvessels, and because a general tuberculous status was established in one case and some systematic disorder was suggested by bilateral macular changes in the other, the author considers the pigment on the optic disc to be of hematogenous origin, i.e., an outcome of slight bleeding from diseased retinal veins.

M. Beigelman.

Behr, C. **Pathogenesis of "choked disk."** Archiv Oftalmologii (Russian), 1929, v. 5, pt. 3, pp. 286-298.

Against Schieck's assumption that choking of the optic disk is due to penetration of intracranial fluid into the intervaginal spaces of the optic nerve, then into the perivascular pathways of the central blood vessels, and finally into the parenchyma of the optic nerve, Behr proposes his own theory: "strangulation" of the optic nerve by increased intracranial pressure, aneurism of the carotid, or orbital pathology with a resulting stasis of lymph in the optic nerve tissue. Of the many anatomical, physiological and clinical arguments which Behr brings in favor of this theory, some are well known from his pre-

vious publications. Of particular interest are the complete anatomic isolation of the perivascular lymphatic channels in the intervaginal spaces of the optic nerve which he had recently established together with Wilbrand, and the interpretation of "choked disc" in perforating injuries of the eyeball as due to a "backflow" of lymph in the optic nerve following the decrease of intraocular pressure.

M. Beigelman.

Kyrieleis, Werner. **Choked disc.** Graefe's Arch., 1929, v. 121, p. 560.

Choked disc is classified as that caused by pressure from the brain, that from disease of the blood, and that from ocular causes.

In chlorosis and polycythemia particularly, there occurred fairly frequently swellings of the papilla and in a number of cases typical choked disc which could not be distinguished from the ophthalmoscopic appearance of choked disc in brain-tumor. In all the cases showing choked disc, lumbar puncture disclosed increased pressure in the cerebrospinal fluid, sometimes up to 600 mm. of water (the normal is 100 to 200 mm. of water). Choked disc in these cases therefore occurred as the result of an increased intracranial pressure.

Choked disc also may occur in eyes having considerable diminution of tension following a perforating injury or ulcer, just after operative opening of the eyeball, after severe contusions of the eyeball without opening of the ocular capsule, and in phthisis bulbi. In two tables are listed the salient facts in sixty-two such cases taken from the literature. In most of these cases inflammatory signs were absent in the posterior part of the eye. Animal experiments on dogs and monkeys in which diminished tension has been produced by trephining at the limbus prove it possible to obtain a swelling of the papilla similar to the human choked disc produced in the same way. Important is the mechanical factor of production of edema of the papilla from the partial vacuum within the eyeball. *H. D. Lamb.*

Weill, Georges. **The relation between inflammation of the posterior sinuses and disease of the nervus opticus.** Arch. of Ophth., 1929, v. 1, March, pp. 307-310.

The author notes the origin in the sinuses of cases of optic neuritis, unilateral or bilateral, arising from malignant neoplasms of the sinuses and from inflammatory sinusitis. But cases of acute retrobulbar neuritis he does not attribute to sinus disease. He defines this type of disturbance as being generally unilateral, occurring among young people, chiefly females, marked by sudden and serious diminution of vision with central scotoma. Blindness may result, but no obvious changes are present in the disc during the acute stages of the disease. The second eye becomes involved at a somewhat later date. The author believes that practically all such cases are due to multiple sclerosis, and he found from a study of his own and others' patients that progressive, almost total, restoration of vision without surgical intervention had taken place in eighty-five per cent. He therefore feels that, while many cases of this type have cleared rapidly following operation, such operations are not justified and recovery would occur in such cases without surgical intervention. *M. H. Post.*

12. VISUAL TRACTS AND CENTERS

Borsch, Phillips. **Treatment of sudden blindness of undetermined retrobulbar origin.** Bull. Soc. Franç. d'Opht., 1928, p. 317.

Borsch reports two cases of rapidly progressing bilateral loss of vision unaffected by any of the usual therapeutic measures. No evidence of multiple sclerosis, lues, or sinus disease could be discovered, and the fundi were ophthalmoscopically normal. As a last resort lumbar puncture was tried and produced striking results. Immediate improvement occurred, and in one case the visual

acuity returned from 1/4 to 4/4 in twenty-four hours. The author recommends spinal puncture in cases in which ordinary treatment has been ineffective, and he also calls attention to the diminution in intraocular tension following this procedure, as of possible value in glaucoma.

Phillips Thygeson.

Gurvitch, B. A. **The influence of hypophyseal hypertrophy upon the visual fields during pregnancy.** Russkii Opht. Jour., 1929, Feb., pp. 146-156.

A study of the visual fields in pregnancy shortly before its termination was carried out on one hundred cases, with the use of a five mm. indicator for white and a ten mm. indicator for red on Förster's perimeter. A five to fifteen degree bitemporal contraction was found in approximately one-third and a similar defect for red in one-fourth of all cases examined. For control purposes the same technique was used in a perimetric study of forty-five nonpregnant individuals, with strikingly identical results as to the incidence of temporal contractions. The author concludes that the bitemporal field lesions which have been reported by various authors as due to hypophyseal changes during pregnancy are simply individual variations of visual fields.

M. Beigelman.

Wilbrand, H. **Observations on scintillating scotoma.** Zeit. f. Augenh., 1928, v. 66, Dec., p. 323.

Five times since his thirtieth year the author has been afflicted with a transient attack of scintillation associated with a central scotoma. After ten minutes it subsided without headache. After an attack in June, 1928, a permanent paracentral homonymous hemianopic scotoma developed, demonstrated by the fact that a one-minute white object disappeared in both right field halves, five degrees from the fixation point exactly on the horizontal meridian. The author believes the lesion to be in the cerebral cortex and not in the corpus geniculatum, because the visual fibers are so closely packed in the latter area that a lesion producing so small a defect is unlikely.

F. H. Haessler.

13. EYEBALL AND ORBIT

Fage. **Orbital cellulitis.** Bull. Soc. Franç. d'Opht., 1928, p. 362.

Fage states that the cause of orbital cellulitis can usually be found in an inflammation of one or more of the accessory nasal sinuses. There are, however, certain cases of cellulitis which appear without apparent cause, and in which the rhinoscopic and radiologic examinations are negative. Medical treatment alone can produce resolution in certain cases, but, when the disease is seen to progress and to seriously endanger the optic nerve, exploratory puncture with the Graefe knife is justified. Even in the absence of pus this procedure is useful, as it diminishes the congestion and occasionally aborts the infection. If a localized pus pocket is found, the wound can be enlarged to provide drainage. The treatment of the accompanying sinusitis is always indispensable.

Phillips Thygeson.

Nida. **Osteosarcoma of the orbit.** Bull. Soc. Franç. d'Opht., 1928, p. 367.

Nida reports a case of unilateral exophthalmos in a woman aged twenty-eight years. The condition was first noticed at the age of eight years and progressed only very slowly. Palpation revealed a painless, hard mass in the upper inner angle of the orbit. Biopsy revealed an osteosarcoma. The author emphasizes the difficulty in making an exact diagnosis of orbital neoplasms and states that the prognosis must be based on the anatomopathologic study of the lesion.

Phillips Thygeson.

Thompson, Ernest. **Macrophthalmos, displacement backwards of the optic nerve entrance, with history of trauma at birth.** Brit. Jour. Ophth., 1929, v. 13, March, p. 127.

The case which this observer reports, while showing certain differences, is essentially quite similar to the

case reported by McRae in the February issue. A girl aged thirteen years presented a right eye larger than its fellow, the cornea being about two mm. wider. The palpebral fissure was notably wider. There was myopia of about five diopters. The anterior chamber was deep. Tension was apparently normal. Media and fundus were without interest except at the site of the optic entrance. There was no disc properly so called. The region presented on surface focusing the appearances of a cavity with a dead-white background, surrounded by a fringe of retinal vessels. By careful focusing there was seen a goblet-like depression, the edges overhanging. Over this edge the vessels dipped and entirely disappeared. At the bottom were observed small and larger vessels indistinguishable from one another. Focusing more deeply, the two vessels emerged from a funnel-shaped opening almost like a hollow stem, and passed upward to disappear under the overhanging edges. All branching of vessels takes place out of sight under the overhanging edges, except one branch toward the macular region. At the bottom of the goblet are observed shadowy lines which might represent the lamina cribrosa.

A large capillary nevus covered the right temple. The child was from an instrumental birth, and every indication pointed to the forceps blade having gripped the face on the right side. The enlargement of the right eye was noted three days after birth. The eye did not fall into the buphthalmic class. It is possible that the condition resulted from undue pressure. (One illustration.) *D. F. Harbridge.*

NEWS ITEMS

News items in this issue were received from Drs. Francis A. Brugman, Seattle; F. E. Burch, St. Paul; C. A. Clapp, Baltimore; Lucien S. Gaudet, Natchez; M. Paul Motto, Cleveland; Walter R. Parker, Ann Arbor; G. Oram Ring, Philadelphia; and Charles P. Small, Chicago. News items should reach **Dr. Melville Black**, Metropolitan building, Denver, by the twelfth of the month.

Deaths

Dr. Clarence L. Frey, Scranton, Pennsylvania, aged seventy-seven years, died March thirteenth, of myocarditis.

Dr. E. L. Posey, Jackson, Mississippi, aged forty-one years, died recently.

Professor H. Truc, emeritus professor of ophthalmology at the university of Montpellier, died February twenty-fourth in his seventy-second year.

Mrs. Marie A. de Uribe Troncoso, wife of Dr. M. Uribe Troncoso of New York City, died on April eighteenth after a protracted illness. Mrs. Uribe Troncoso was a member of one of the socially prominent families of old Mexico.

Miscellaneous

The Newark Eye and Ear Infirmary was left $50,000 by the late Felix Fuld of that city.

The New York Eye and Ear Infirmary was a beneficiary under the will of the late Samuel Zucker.

Under the will of the late Dr. Thomas F. Smallman, Brooklyn, the Brooklyn Home for the Blind was left $5,000.

The Manhattan Eye, Ear, and Throat Hospital and the Herman Knapp Eye Memorial Hospital, New York, were left $10,000 each under the will of the late William Crawford.

About fifteen years ago a survey completed by Dr. John McMullen, United States public health officer, showed that there were more than 50,000 cases of trachoma in Kentucky. Today Dr. Arthur T. McCormack, state health officer, estimates that there are fewer than 3,000 cases.

Fraudulent eye specialists operating in Canada are reported to have fleeced Robert Lannin, a wealthy farmer living in Kingsville, Ontario, out of $500 for a so-called operation which was done to save his sight. The operation consisted in snipping off some eyelashes and massaging his eyes. We wonder if such gullible people would be so easily separated from their money if a legitimate operation had to be done by a legitimate surgeon.

The Baltimore Eye, Ear, Nose and Throat Charity Hospital inaugurated a drive on May sixth for one hundred and fifty thousand dollars to install a new x-ray outfit and to improve the nurses' headquarters.

Congress has appropriated $12,000 to per-

mit experts from the United States Bureau of Entomology to go to California and assist in the destruction of the gnat Hippelates pujio, which is responsible for diseases of the eyes of many children in the Coachella valley. It swarms about the faces of human beings and farm stock.

The attitude of most German ophthalmologists toward the problem of focal infection is brought out in the latter part of the fourth paragraph of Dr. Beigelman's review of Brückner and Meisner's book Grundriss der Augenheilkunde, on page 517 of this issue.

Dr. Leo L. Mayer writes to call attention to a series of ten lessons on the surgery of the eye to be given in English by Drs. Morax, Magitot, Bollack and E. Hartmann, in Paris, beginning October 1, 1929. The lessons will be given every other day in the anatomical amphitheater, 17 rue du Fer-a-Moulin, Paris. The fee for the course is five hundred francs, and it is necessary to register in advance with the manager of the amphitheater.

Societies

International Congress at Amsterdam: Those who at this late date are only just considering attendance at the International Congress of Ophthalmology at Amsterdam, September 5 to 13, should send their subscriptions ($10.00 for members, $5.00 for associates) to Dr. H. M. Roelofsz, care of the Incassobank, 531 Heerengracht, Amsterdam.

The annual meeting of the Puget Sound Academy of Ophthalmology and Otolaryngology was held at the Virginia Mason hospital, January 15, 1929. The following officers were elected for the ensuing year: president, Dr. Will Otto Bell, Seattle; first vice-president, Dr. Albert B. Murphy, Everett; second vice-president, Dr. F. J. Bjerken, Aberdeen; secretary-treasurer, Dr. Francis A. Brugman, Seattle. The Academy meets the third Tuesday of each month, July and August excepted.

The new Cleveland Ophthalmological Society was formally organized at a dinner meeting held on April twelfth. Dr. Clarence King of Cincinnati was the guest of honor. As previously announced, the membership of this new society will include ophthalmologists in Cleveland and neighboring cities. The following officers were elected for the ensuing year: president, Dr. W. E. Bruner; vice-president, Dr. H. H. Shiras; secretary and treasurer, Dr. Paul M. Motto; membership committee, Drs. S. H. Monson, A. B. Bruner, and Paul G. Moore.

Dr. Arthur J. Bedell of Albany addressed the Albany County Medical Association, April tenth, on ocular findings in the newborn.

At a recent meeting of the ophthalmological section of the Baltimore City Medical Society, Dr. Lee Goldbach was elected to the chairmanship and Dr. Angus McLean as secretary.

Drs. Edward C. Ellett and Ralph O. Rychener, Memphis, Tennessee, on April sixteenth addressed the medical association of the state of Alabama on sarcoma of the iris and gumma of the iris, respectively.

Dr. H. Maxwell Langdon, professor of ophthalmology in the graduate school of the university of Pennsylvania, presented a paper upon alterations of the visual apparatus due to vascular lesions at a recent meeting of the Philadelphia County Medical Society. From the ophthalmological viewpoint the discussion was opened by Drs. J. Milton Griscom and Thomas B. Holloway.

Drs. William H. Wilmer and James M. H. Rowland spoke on ophthalmia neonatorum at the Maryland conference of health officers held at Baltimore May tenth and eleventh.

Dr. Henry P. Wagener of the Mayo Clinic recently read a paper before the South Carolina State Medical Society on the significance of retinitis in hypertension.

At the recent annual meeting of the Illinois State Medical Society at Peoria, Dr. Derrick T. Vail of Cincinnati read a paper on the oculoglandular form of tularemia.

At the meeting of the Ohio State Medical Association Dr. John M. Wheeler, professor of ophthalmology at Columbia University, was the guest of honor. He spoke to the ophthalmic section of exophthalmos from different causes.

At the first dinner meeting of the Cleveland Ophthalmological Society, Dr. Clarence King of Cincinnati, Ohio, spoke on "Some instruments and procedures of value in cataract extraction". The organization of the society was completed by electing the following officers for the ensuing year: president, Dr. W. E. Bruner; vice-president, Dr. H. H. Shiras; secretary-treasurer, Dr. M. Paul Motto.

Personals

Dr. Richard L. Bauer, formerly of Madison, Wisconsin, has located at Fargo and has become associated with Dr. Rolfe Tainter.

Drs. Walter R. Parker, George Slocum, and Albert S. Barr announce the removal of their offices to the First National Bank building, Ann Arbor, Michigan.

Dr. Harry Woodruff of Joliet, Illinois, invited the members of the Chicago Ophthalmological Society to visit his new eye clinic building on the third of June. There was a dinner and the doctor conducted a clinic.

Dr. Ernest H. Rowen was recently appointed resident ophthalmologist in the ophthalmic division of Lakeside hospital, Cleveland.

Dr. W. E. Bruner, professor of ophthalmology in the school of medicine at Western Reserve University recently left for three weeks' holiday at his camp in the Adirondacks.

Mail order spectacle quacks: eye exercises.—The selling of spectacles through newspaper and magazine advertising by unscrupulous mail order houses is branded by the National Society for the Prevention of Blindness, in a recent newspaper release, as "both a fraud and a menace". This warning has been sent to publishers throughout the United States in a special bulletin of the National Better Business Bureau. In the same bulletin, the Society also terms as "quackeries" the mail order course in eye exercises which advertise a relief from eye strain and defective vision, without a thorough examination.

Says the Society: "These mail order houses are selling glasses without asking for any symptoms, without testing the vision of the prospective purchaser, and without even an inquiry as to the condition of health of the eyes. These optical quacks ask merely: 'How old are you?', 'How many years have you worn glasses, if any?', and 'What is the shape of your face—round or slender?' Upon this information they offer to fit any person with glasses, promising 'the most perfect vision of any lenses you can get'. 'These splendid glasses,' their circulars promise, 'will enable anyone to read the smallest print, thread the finest needle, see far or near, and will prevent eye strain or headache'.

"Investigation has shown that the glasses which are actually sent are simply a fair grade of magnifying glasses mounted in an extremely poor grade of frame. These are advertised as 'scientifically ground and curved lenses'.

"Probably the most serious aspect of the question, from the standpoint of the prevention of blindness, is the missed medical problem. Many disease conditions which finally result in partial or complete blindness first produce disturbances of vision which are only temporarily corrected, hence concealed, by lenses. In the absence of a complete eye examination when glasses are prescribed, the underlying evidence of eye disease, frequently an indication of disease of the general system, may be overlooked until it is too late to prevent blindness and widespread physical disaster."

Concerning the mail order courses in "eye exercises," the Society says: "The slogan, 'Throw away your glasses', with its many variations, is used to advertise a relief from eye strain and defective vision which is not borne out by the findings of medical science. It is true that ophthalmologists do, under certain conditions, prescribe for their patients certain eye exercises, chiefly of the muscles performing movements of the eyeball and aiming to bring muscles into more complete coordination. It is also true that the medical profession agrees generally that such eye muscle exercises should be attempted only under careful and adequate supervision. Such muscle training should only be prescribed after a complete eye examinaton has been made, supplemented frequently with a general physical examination and laboratory tests. Wisely applied, muscle tests may relieve certain cases of eye strain where glasses are not really indicated; but to 'throw away your glasses' without examination and competent advice may result in serious eye strain and may even cause profound disturbances of the nervous system.

"This quackery is foisted on the American public in two ways: first, through advertising in the daily press and various weekly and monthly publications; and second, through disciples of this method who travel from city to city and, with the help of advertising in the local press, hold meetings at which their so-called aids for better eye sight are sold."

The National Society for the Prevention of Blindness, as well as the National Better Business Bureau, an organization which aims at improving business by making it more honest and reliable, is to be congratulated on this clear and emphatic statement of a disgraceful situation.